

WIRED

Premiere UK Edition

Judge Dredd:

From celluloid to silicon

Europe at War:

The battle for *la culture*

Douglas Adams:

He can sell you anything

The Turing Test:

What's it mean to be human?

**"We have it
Thomas Paine
in our power
Digital Revolutionary
to begin the world
1737-1809
over again"**

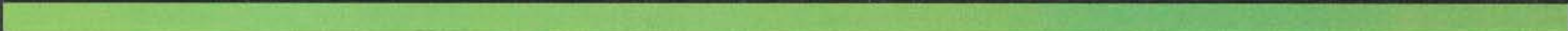


9 771357 097005


£3.50

Back in the late 1970's,
while most people were still
listening to disco, a few
young radicals who ignored
conventions proposed the
idea that computers should
be small and personal.

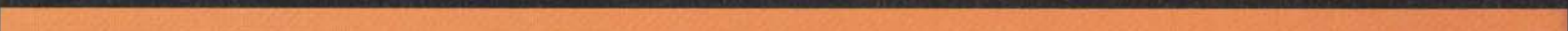
They talked about how these little computers could be liberating and creative. How they could give ordinary people the power



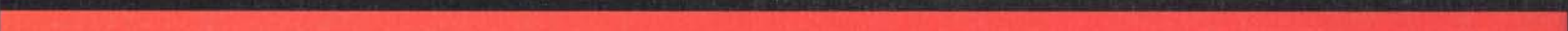
to do extraordinary things. That they would not only change the way business worked, but that they would change the way




the world worked. Conventional wisdom said they were mad. Insane. Why would anyone want a personal computer? Time



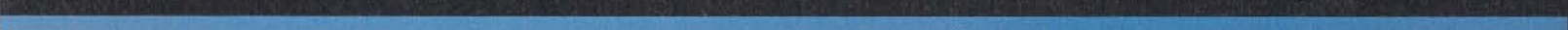
passed. And a lot of things happened that people never thought would happen. The Berlin Wall fell. People started saying what



they felt like. You could reach the President of the United States at his Internet address. And little computers were everywhere.



Not just in offices, but in homes. Not just in planes, but in economy class. In the hands of poets and musicians as well



as technicians and programmers. And this is a magazine for all of us. We're reading it. Soon, everyone will be.



The only car
that doesn't use
other cars' performance
figures to
justify its existence.

PORSCHE



Porsches have always served as a benchmark for other marques. None more so than the 911 Carrera. The legendary 3.6 litre flat six boxer engine accelerates from 0 to 62 mph in 5.6 seconds, while the race-bred disc brakes take you from 62 to 0 in half that time. What manufacturers wouldn't

aspire to figures like that? However, it isn't just a set of statistics on wheels. Combine its distinctive lines with the world debut of ABS5, Lightweight Strut Rear Axle and the famous retractable spoiler and you have a car that need only justify itself to one person: the driver.

For more details, write or send your business card to Julian Ormerod, Porsche Information, PO Box 300, Crawley, West Sussex, RH10 2YW. Or telephone 0622 722212.

"I've never found



HP Vectra VL2.

Value priced PC series.

Intel 486 SX, SX2, DX2, DX4 and Pentium® processors with optional cache.

4/8MB RAM expandable up to 64MB.

Expandable package with 4 slots and 4 mass storage shelves.

Fast-IDE hard disk controller on most models.

Local bus video with graphical accelerator.

3-year warranty.

that didn't suit an HP® PC."

Vic Koper, Service Centre Manager, Britannia Airways.

HP Vectra PCs won PC Magazine's 1994 Reader's Choice Award for service and reliability.
For more information call 01344 369 222.



a job



HP Vectra XU. Pentium® system for expert users.

Intel 90Mhz Pentium processor with 256Kb cache.
32-bit PCI-based integrated LAN.
Integrated PCI-based SCSI controller.
Choice of PCI integrated video
or Matrox PCI graphics card.
Upgradeable to Pentium
dual processing.
3-year warranty.



HP Vectra N2. Network ready PC series.

Intel 486SX, SX2 and DX2 processor with optional cache.
8MB RAM expandable up to 96MB.
Fast-IDE hard disk controller.
Slimline package with 3 slots and
3 mass storage shelves.
Optional integrated 10Base-T network interface. 3-year warranty.

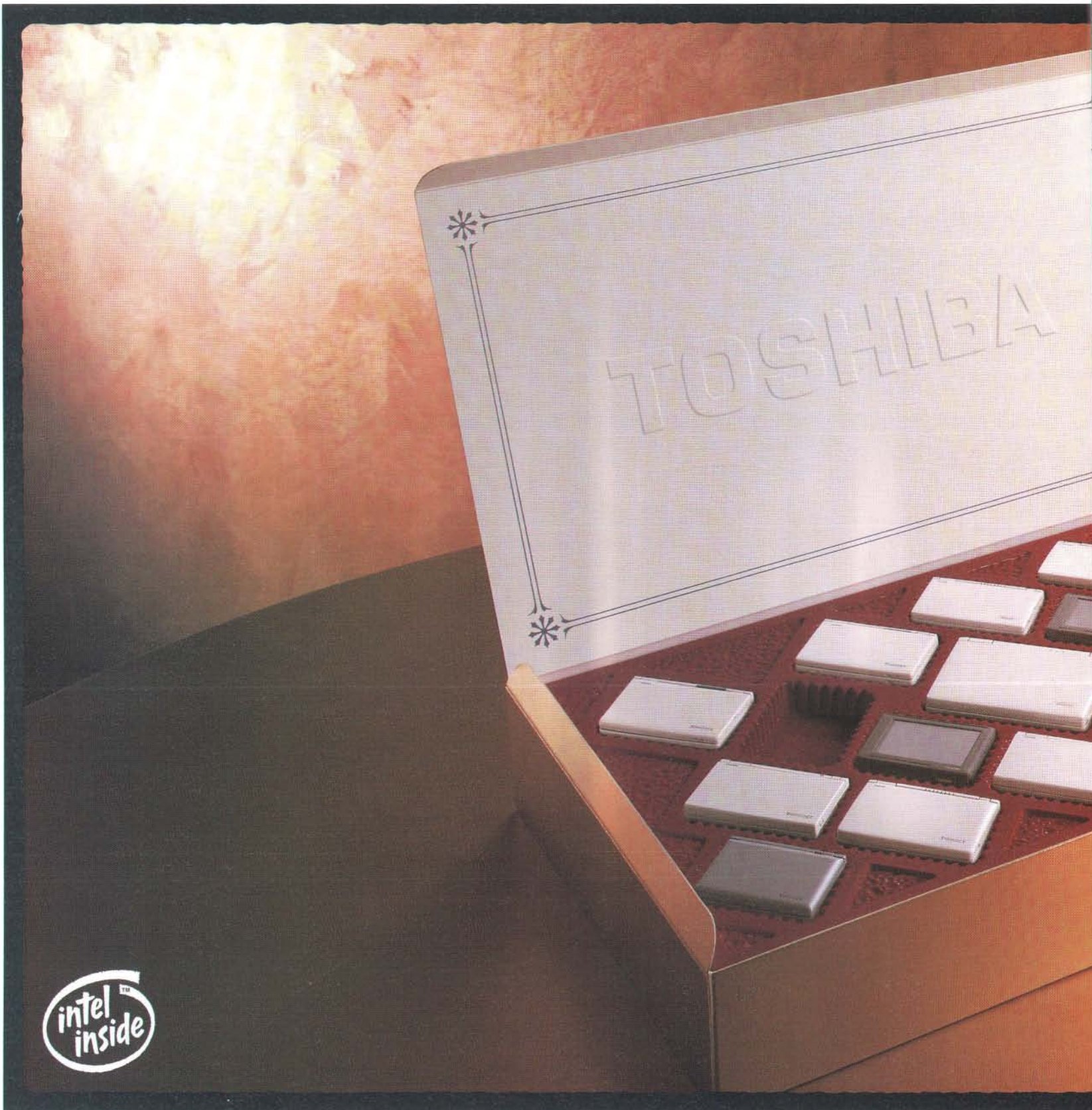


HP Vectra XM2. High performance PC series.

Intel 486 DX2 and DX4 processors with 256Kb cache.
8MB RAM expandable up to 96MB.
PCI-based video with 1MB video RAM.
2 PCI I/O slots, 2 ISA slots.
Fast-IDE hard disk controller.
32-bit integrated network interface.
3-year warranty.

HP Vectra PCs. Tried and trusted.

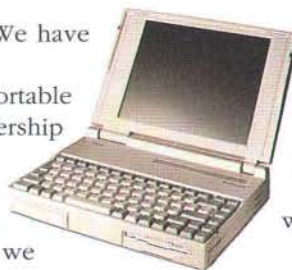




Toshiba have a portable to suit everyone's taste. We have literally handfuds for you to pick and choose from.

Not only do we offer the widest selection of portable computers but also according to a PC Magazine readership survey, Toshiba is the name on everyone's lips for service and reliability.

That's because at Toshiba we believe in making our portables as future proof as possible. For example, we



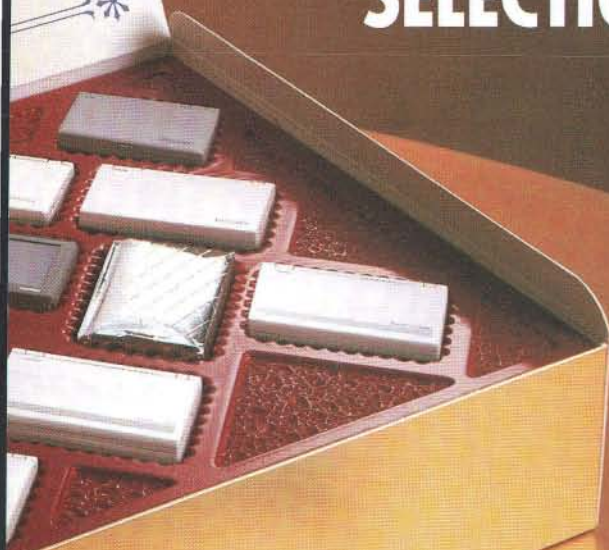
were first to fit PCMCIA slots, we were first to implement TFT screens and now, with the T4900CT, we are first to build a low energy Pentium based portable computer.

Not surprisingly, the T4900CT is the most powerful portable we've ever built and sits at the top of the range.

In the middle of the range there's the T2450CT filled with a host of mouth watering features.

Whilst last but not least, the T2100 is priced to allow

CHOOSE FROM THE LARGEST SELECTION OF PORTABLES.



everyone to get their teeth stuck into a quality portable.

For a taste of the latest technology try the T2150CDT with a brand new centre, a built in CD-ROM drive.

As with all other Toshiba's the T2150CDT has been created using only the finest ingredients, and we're certain it will sweeten up many a multimedia presentation.

If you would like more information on the world leader in portable computers please call us on 01932 828 828.

There's only one drawback to the Toshiba collection, you'll be spoilt for choice. Anything else just doesn't compute.

In Touch with Tomorrow
TOSHIBA

Toshiba IPS Marketing, Freepost, PO Box 28, Pangbourne, Reading RG8 7BR.

メディア

"The medium,

or process, of our time — electric technology —

is reshaping and restructuring patterns of social interdependence

and every aspect of our personal life.

It is forcing us to reconsider and re-evaluate practically

Everything is

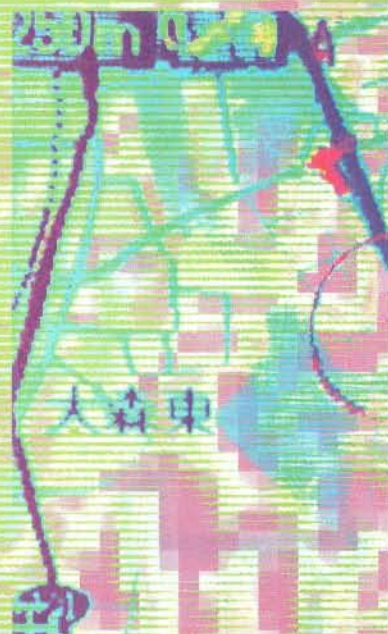
every thought, every action, and every institution

formerly taken for granted.

私たち

you,

changing.....





教育

your education,

家庭

your family,

your neighbourhood,

仕事

your job,



your government,

それらは劇的に変わろう

And they're chang-

your relation to "the others".



Why Wired?

Because the Digital Revolution is whipping through our lives like a Bengali typhoon — while the mainstream media is still groping for the snooze button.

Because the most fascinating and powerful people today are not politicians or priests, or generals or pundits, but the vanguard who are integrating digital technologies into their business and personal lives, and causing social changes so profound their only parallel is probably the discovery of fire.

変わろうとしている And because it's finally time to embrace the future with optimism again, in the realisation that this peaceful, inevitable Revolution isn't a problem, but an opportunity to build a new and better civilisation for ourselves and our children.

Our first instruction to our writers: Amaze us.

Marshall McLuhan

Our second: Report back from the future about what's coming —

The Medium is the Message 1 9 6 7

about work outside workplaces, markets without masters, entertainment beyond mass media, civic mindedness beyond government, community beyond neighbourhoods, consciousness that spans the globe. If it challenges assumptions — positively or negatively — so much the better.

So why now, why *Wired*? Because in this age of information overload, the ultimate luxury is meaning and context.

Or put another way, if you're looking for the soul of our new society in wild metamorphosis, our advice is simple. *Get Wired.*

— LR

You can reach me at lr@wired.co.uk.

Contents

- 19 Electric Word** Bulletins from the front line of the Digital Revolution
- 35 Geek Page** Spread-Spectrum Radio
- 38 Fetish** Techno-lust
- 43 Common Sense** Liberation Technology and the future of democracy

ELECTROSPHERE

- 44 Crash Course** by Sadie Plant
- 48 Anime Nations** by Andrew Leonard
- 53 Life in the Digital City** by Peter Hinssen
- 56 Reward Systems** by Rogier van Bakel

IDÉES FORTES

- 60 Hunter Gatherers** by Don Peppers & Martha Rogers
- 61 Money Doesn't Matter** by Roy Davies

64 The Age of Paine

His "Rights of Man" was a clarion call for universal democracy.
His "Common Sense" inspired Americans to independence. He died 186 years ago.
So why should Thomas Paine be the patron saint of the age of information?
Jon Katz on an old hero for a new era

70 Agents of Change

Pattie Maes believes software agents are ready for primetime. By Scott Berkun

72 Culture War

François Mitterrand has declared war on Mickey, Madonna and American culture.
Bad news François, Mickey's winning. John Andrews reports from the front

78 Good Cat, Bad Pig

By Mark Frauenfelder

80 What's It Mean to be Human Anyway?

Alan Turing reckoned that if a computer could talk like a human being,
it deserved to be called intelligent. Charles Platt reports on a competition to
determine the most human computer, even as he worries that he may be
the least human human

86 Billion Year Brain

James Lovelock, the father of Gaia, has seen the planet's past —
and its future. By Robert Leedham

88 Viacom Doesn't Suck!

How Viacom is leveraging its brand strength
to create the first 21st century (new) media company. John Battelle reports

93 Street Cred

105 Net Surf

109 Deductible Junkets

114 What Have We Got to Lose?
by Douglas Adams

WIRED

1.01

Premiere
UK Edition

1995

Cover: Thomas Paine illustration by Mark Sommers
Introduction: Images by Erik Adigard

What the future

WIRED

Editor-in-chief: Louis Rossetto
Creative Director: John Plunkett

Executive Editor: John Browning
Managing Editor: Stevan Keane
Associate Editor: Robin Hunt
Features Editor: Robert Leedham
E-Sphere Editor: Dan O'Brien
Netsurf Editor: Debbie Fellner
Reviews Editor: Dave Green
Copy Editor: Alexis Harvey
Contributing Editors: Douglas Adams, David Jacobs (Fetish), Bob Johnstone (Japan), Bernie Krishner (Asia), Sadie Plant
Contributing Writers: John Andrews, John Perry Barlow, James Bloom, Paulina Borsook, Stewart Brand, Gareth Branwyn, Arthur C Clarke, Douglas Coupland, Simon Davies, Simson L Garfinkel, William Gibson, Mike Godwin, John Heilemann, Peter Hinssen, Joi Ito (Japan), Simon Jameson, David Kline, Jaron Lanier, Brenda Laurel, Jacques Leslie, Steven Levy, Jules Marshall, Brock N Meeks, Pamela McCorduck, Ted Nelson, Phil Patton, Charles Platt, Joshua Quittner, Jef Raskin, Rudy Rucker, Paul Saffo, Michael Schrage, Peter Schwartz, John Shirley, R U Sirius, Steve G Steinberg, Neal Stephenson, Bruce Sterling, Rogier van Bakel, Martin Walker, Gary Wolf, John Wyver

Design Director: Mark Porter
Designers: James Chambers, Suzy Hogg, Bev Douglas
Picture Editor: Karen Tucker
Production Manager: Carolyn Roulstone
Production Assistants: Andrew Legg, Liz Citron
Contributing Artists & Photographers: Erik Adigard, Jason Bell, Richard Dean, Georgeann Deen, Richard Faulks, Jill Greenberg, Pamela Hobbs, Rian Hughes, Simon Marsh, Spiros Politis, Clark Quinn, Ashkan Sahihi, Mark Sommers

Advertisement Director: Carolyn McCall
PA to Advertisement Director: Beth Sandler
Advertisement Manager: Duncan Pringle
Advertisement Executive (IT): Ian Soffe
Advertisement Executive (Consumer): Craig Wilkie

Wired UK
Managing Director: David Brook
Creative Director: Tony Ageh
Financial Director: Paul Nalsmith
Planning Director: Stella Beaumont
Publishing Manager: Julian Turner
Product Manager: Polly Cochrane
Marketing and Circulation Executive: Matthew Gee
Planning Executive: Mick Cunningham
Public Relations Manager: Camilla Nicholls
Public Relations Executive: Mathew Clayton
Accounts Executive: Ola Osomo
PA to Managing Director: Katie Thomas
PA to Creative Director: Denis Cassidy

Masters of the Infosphere:
Stephen Angell, Paul Blake,
Marc Lueck, Mark Henshall,
Matt Saul, Mike Sleath,
Lorrie Webster, Dave Potts
Patron Saint: Thomas Paine



"We see with other eyes; we hear with other ears; and think with other thoughts than those we formerly used."

How to reach Wired:
Online:
Editorial: edit@wired.co.uk
Advertising: ads@wired.co.uk
Other: info@wired.co.uk

119 Farringdon Road, London EC1R 3ER
Tel: +44 (0171) 713 4465
Fax: +44 (0171) 833 2957

Editorial: +44 (0171) 713 4465
Design: +44 (0171) 713 4465
Marketing: +44 (0171) 713 4471
Advertising: +44 (0171) 713 4456

Subscriptions, payments, problems or enquiries:
Tel: +44 (01424) 758 300
Fax: +44 (01424) 755 519
e-mail: subscribe@wired.co.uk
Snail mail: Wired, Freepost TN 7268, PO Box 101, Hastings TN35 4BR
Individuals (12 issues) £37.80,
Europe £44.00, Rest of world £50.00
Corporate (12 issues) £42.00,
Europe £49.00, Rest of world £56.00
Cheques/postal orders payable to Wired. Foreign subscriptions payable by credit card or UK bank cheque.

Wired Ventures Ltd (USA)
CEO: Louis Rossetto
President: Jane Metcalfe
Creative Director: John Plunkett
Executive Editor: Kevin Kelly Managing Editor: John Battelle
Design Director: Thomas Schneider Production Art Director: Eugene Mosier Foreign Editions, Rights & Reprints: Tara Herman
Patron Saint: Marshall McLuhan: "The answers are always inside the problem, not outside."

© 1995 Wired Ventures Ltd. All rights reserved.
Reproduction without permission is prohibited.
Wired (ISSN 1357-0978) is a publication of Wired Ventures Ltd.
Printed in the UK
Submissions: Enclose a SAE for writers' guidelines.
E-mail: guidelines@wired.co.uk. Digital submissions preferred.
Wired assumes no responsibility for unsolicited material.

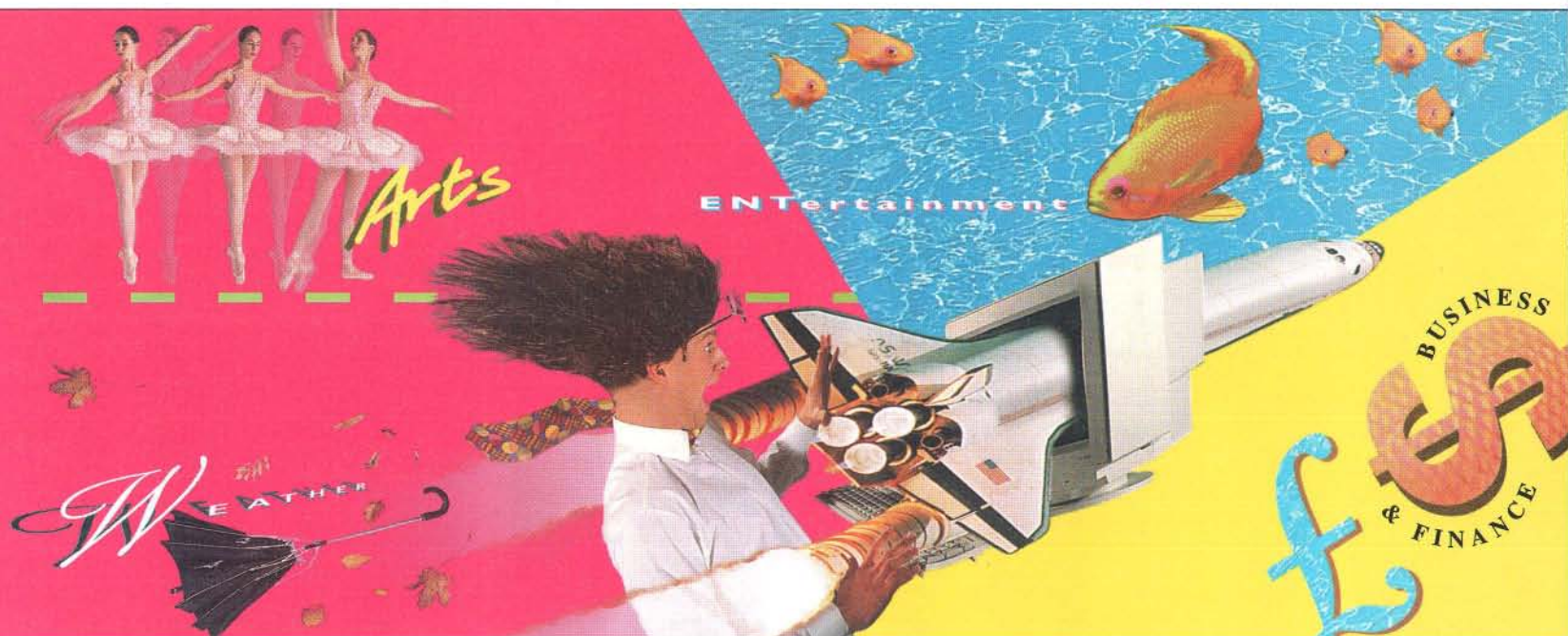


holds.

orange™

hutchison telecom

Get ON-LINE with Sportster®



FROM GOLDFISH TO GOLD BARS

SPORTSTER 14,400

£199*



Whether you're a fish enthusiast or a money man needing the price of gold, there's something for you on the Information Superhighway. Sports forums, travel updates, the latest share prices, even Star Trekking... these are some of the things available to you.

Of course, you may be happy just using the e-mail and faxing facilities.

Either way you'll need a Sportster modem from U.S. Robotics. At £199*RRP for 14,400bps and £299*RRP for 28,800bps, Sportster lets you connect at the highest possible speeds. Saving you time and money.

And because most of the service providers use U.S. Robotics modems, you're assured of a trouble free connection.

All U.S. Robotics Sportsters are bundled with free data and fax software and a 5 year warranty. Mac&Fax models are supplied with a free serial cable.

£299*

SPORTSTER 28,800



SPECIFICATIONS

■ DATA V.34 at 28,800bps (28,800 model only)
V.FC at 28,800bps (28,800 model only),
V.32bis at 14,400bps, V.32 at 9600bps,
V.23 at 1200/75bps, V.22bis at 2400bps,
V.22 at 1200bps, V.21 at 300bps

■ FAX V.17 compatible at 14,400bps,
V.29 compatible at 9600bps,
V.27ter compatible at 4800bps,
Class 1 & Class 2.0, Group III

■ ERROR CORRECTION/DATA COMPRESSION
V.42, V.42bis & MNP 2-5

■ SOFTWARE Quicklink II data/fax software for DOS and Windows is supplied with Sportster 28,800 Fax, and both the external and internal versions of Sportster 14,400 Fax. Mac&Fax models are supplied with data/fax software specifically for the Apple Macintosh.



*Price excludes VAT



U.S. Robotics
The Intelligent Choice in Data Communications

U.S. ROBOTICS LIMITED
224 BERWICK AVENUE • SLOUGH • BERKSHIRE SL1 4QT
TELEPHONE: 01753 811180 • FAX: 01753 811191

0 8 0 0 2 2 5 2 5 2

Odd. Grim little British comic strip *Judge Dredd* turns into futuristic Hollywood blockbuster starring Sylvester Stallone — but is filmed in England. Videogame rights are snapped up by mighty US software house Acclaim — and the game is written in the UK. In the Croydon offices of Probe Entertainment, to be exact.

Executive producer Tony Porter (left of picture) and associate producer Tyrone Miller are the men responsible. If, like most games-of-the-film, *Judge Dredd* turns out to be appalling, it'll be their fault.

Miller works for Acclaim; his previous credits include *Maximum Carnage* and *Smash TV*. He's over here "to work on enemy logic and memory compression." Porter works for Probe and is co-ordinating the whole project — a 12-month job. Three artists have worked on the Dredd character, for instance, giving him 98 separate animation sequences (mostly kicks,

Waiting for

punches and headbutts, admittedly, but there's a nice badge-polishing one when he stands still). The game *looks* great — but may play like a dog.

The biggest problem with film licenses, says Porter, "is Hollywood. They're over-protective of their material. We won't see a single piece of footage from the film outside trailers until it's actually released. We've only managed to get on three or four sets out of God-knows-how-many they've built. I'd quite happily employ somebody to be on set, taking snapshots. We could make the game so much better, so much more like the film."

He's not depressed though. "The days when the games are gonna make more than the films are not that far away," he smiles. "Things'll change in the future." — *Robert Leedham*

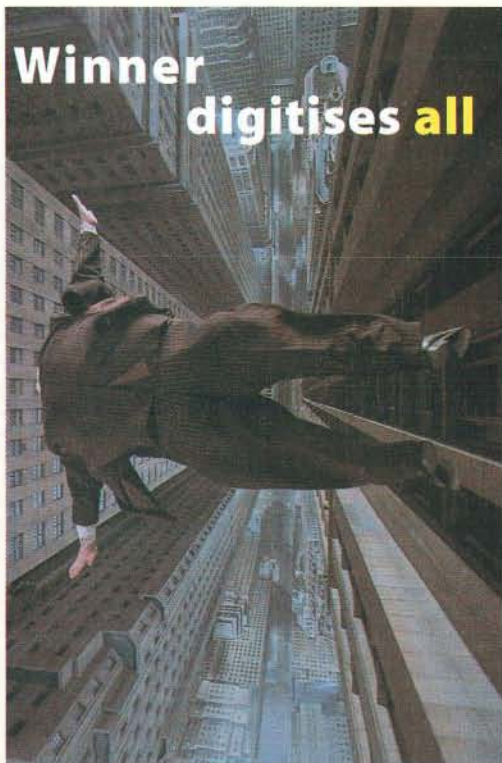


JASON BELL



E L E C T R I C

The Winner digitises all



≡ Over-hyped, over-designed, and over here: Revolution started in these parts (thank you Thomas Paine, see Jon Katz's article p64), sailed to the Americas via Paris, brought about the Rights of Man and the First Amendment, and caused a few other shake-downs on the way. Now Revolution's back on the agenda. And it's digital. Yeah, but you still have to pay when you ring toll-free (1-800) US numbers from the UK — there's still no such thing as a common-

Dr Mike Boudry is celebrating the tenth birthday of the Computer Film Company with an Oscar. Earlier this month he received a technical Academy Award for his pioneering work in digital film input scanning. Boudry is the man behind many of the effects in films as diverse as *The Hudsucker Proxy* — "our peak of perfection," he says — *Little Buddha*, *Wuthering Heights* and *Interview with the Vampire*. He takes movie images and makes them digital to create seamless effects. Sounds easy, but ten years ago the technology didn't even exist.

CFC's first digital scanner was hand-built in 1985 using Hewlett Packard components and a black and white charge-coupled device. Two years later CFC's digitising techniques made their debut in *Fruit Machine*, a British film in which a

male swimmer turns into a dolphin.

Now Soho-based CFC is the largest digital film facility in Europe with 40 employees and a further 15 working out of a Los Angeles office. Turnover is around £5 million a year. It's no surprise: Chief Executive Boudry is a perfectionist — 35mm is the minimum standard he'll work with; IMAX, at all of 120 megabytes of information per frame (or 3 gigabytes per second), is his favourite.

Currently, CFC's longest contribution to a feature film is around 10 minutes but Boudry is sure that "within three years it will be the whole film." For the moment he is content to turn John Malkovich's Dr Jekyll into a grisly Mr Hyde for Julia Roberts' next film, *Mary Reilly*.

And, of course, to sink a few glasses celebrating a bona-fide British success story. — *Robin Hunt*



IN MOST £17,000 CARS, THE LEATHER IS THE THING YOU USE TO MOP THE WINDOWS.

The Calibra SE4 isn't the only coupé to come with four full-sized seats upholstered in sumptuous cream leather, from top to toe.

It isn't the only car to benefit from a full array of sports instrumentation.

And it isn't the only car to come with ABS. Full-size driver's airbag. Alloy wheels. Electric sunroof. And an immobiliser and alarm.

What does make the SE4 unusual is that it costs much less than other such cars.

Leaving you with a lot more money than you expected in your leather wallet.

THE CALIBRA SE4 FROM VAUXHALL 

Doom without Death



Every Thursday in the middle of London, Megatripolis emerges underneath Charing Cross station in the nightclub Heaven — and one dark cavern fills with PCs to become the Virtualitea Room. Clubbers stare at the screens, playing *Doom* in a *Doom* "WAD" that is almost an exact replica of the club they are in. It's even possible to stand in the virtual Virtualitea Room in the *Doom* WAD of Megatripolis and look at a computer screen playing *Doom*. Pomo or what?

"*Doom* is a great computer game. It has provided fast pseudo-3D VR for PC users for over a year now, but the shooting and chain-

sawing gets really boring after a while," says Martin Kavanagh, one of the virtual nightclub's two creators. "We wanted to generate a space using the *Doom* structure where you didn't have to kill everything," adds Adrian Clint, the other programmer.

Now, ambiguous words float in front of the club doorways, invisible barriers lurk on the dancefloor, and the traditional chainsaw has been replaced with a fat spliff: the only thing left is to create realistic sprites for visitors.

The Virtualitea Room has its PCs networked, but right now communication is limited: you can bounce

up and down behind the invisible barriers and watch others doing much the same. Still, it beats listening to jungle.

<http://www.demon.co.uk/drci/shamen/vtroom/vtroom.html>.

To offer a wad, e-mail mark@cogcen.demon.co.uk — James Bloom



sense FREE ocean-hopping phone call in these parts. **III** They came, they met, they peered into the future and they approved: The leaders of the G7 group of rich nations said all the predictable things when they met in Brussels over the weekend of February 25-26 to discuss the information superhighway. Ministers want open access, universal service, equality, diversity and co-operation. Now they just have to get out of the way and let it happen. **III** Three Colours Blue: What's the difference between Sega and Nintendo in the UK? One takes ads in *Penthouse* because it's read by boys of a certain age; the other targets "family" game players and uses the more traditional media instead of all that top-shelf stuff, according to a recent edition of *Marketing Week*.

Evelyn Ficarra has written a classical composition to be premiered in Merseyside. Not for performance at the local symphony hall, but to be played on a "restricted service" local radio station. And there's another difference: no orchestra, just a tape recorder.

The station — Hearing Is Believing — will last a week as part of the Liverpool Tate's month-long *Video Positive* electronic art exhibition this spring.

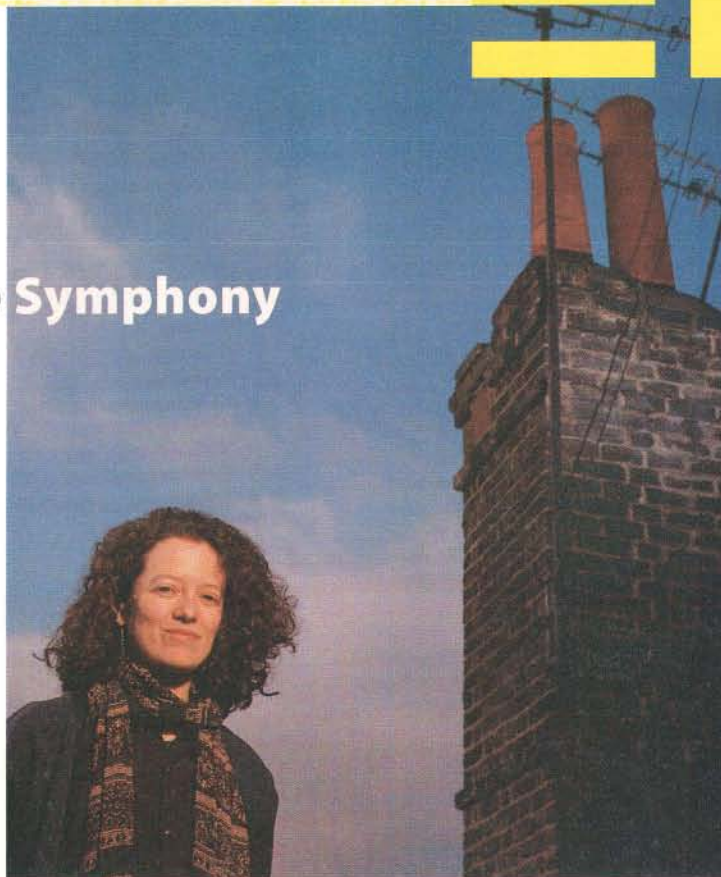
Ficarra's piece is made up of the detritus of the airways. She loves the static and dissonance of radio noise, particularly short wave. "There's the really ghastly reception: hiss, burbling noises, bits of Morse code, different languages, sometimes two stations at once, the rhythms of interference," she says.

Sacramento-born Ficarra keeps her samples on cassettes and 200 floppy disks in a pleasingly low-tech studio in North London. "I call them my radio madness," she says, "I never throw them away."

One earlier piece, *Frantic Mid-Atlantic*, used Morse code sent from the Titanic on the night it sank. "It was about the theme of common access over long distances. As someone who has spent a lot of time hopping back and forth from the US it meant a lot," she says.

Video Positive: April 29 to June 4. HIB 11pm April 28 to midnight May 5 on 105.8 FM. — Robin Hunt

Shortwave Symphony



RICHARD FAULK: OPPOSITE; RICHARD DEAN

Occupying a delightful aspect in the heart of North Yorkshire, the USA's National Security Agency base, Menwith Hill (or F-83 as it is known in American military circles), is expanding. Thousands of staff are engaged in electronic tracking projects with mysterious code names

such as Moonpenny, Rickus, Silverweed, Totaliser, Troutman and Ultrapure. Last May saw the completion of Steeplebush II, a satellite control centre far in advance of previous technology, which will be at the heart of the NSA's Sigint operations.

While Menwith's main talent is in spy satellite

monitoring, the base also has numerous ground lines. Long distance and international voice, data, fax, telex and mobile phone transmissions are tracked here, and sources say the number of these lines is growing fast.

The NSA's British sites can evade US domestic legislation against

phone tapping, but it's clear Menwith could easily listen in to UK citizens as well.

HMG is also taking an interest: the recent Intelligence Services Act allows GCHQ to "monitor or interfere with electromagnetic, acoustic and other emissions".

Add to that Oracle's new Context product —

which can crunch text data streams into an intelligible précis and is already beta-tested at GCHQ — and it's enough to make anyone with a modem paranoid.

The only hope? The European version of *Pretty Good Privacy* can be downloaded from <ftp://ftp.demon.co.uk/pub/pgp/> — Steve Gold

The Hills have Ears



Business is the eng
of



ine

society. Without it
there would be
no jobs.

New...	Ctrl+N
Open...	Ctrl+O
Close	
Save	Ctrl+S
Next Page	
Previous...	
Page Setup...	
Print Preview	
Print...	Ctrl+P



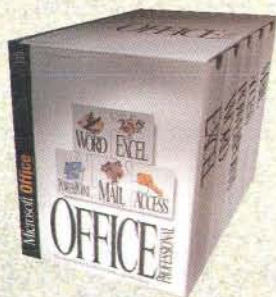
No products.
No competition.
No advancements.

New... Ctrl+N
Open... Ctrl+O
Close
Save Ctrl+S
Next Page
Previous...
Page Setup...
Print Preview
Print... Ctrl+P



Business of society.

We make the
software
that's the engine
of business.



is the engine →

All over the world, Microsoft® Office is helping drive businesses forward by making it easier for anyone to get their job done, no matter what that job might be.

By seamlessly bringing together top applications like Microsoft® Excel, Word and PowerPoint®, to name a few, Office gives people the ability to find the best, most productive way to work. For instance, our IntelliSense™ technology can walk even a novice user through formerly complex tasks, like creating a new chart or graph, with one of our Wizards—helpful step-by-step guides that actually complete the job for you.

No wonder Office is the world's best-selling family of business software. Use it alone, or, within organisations, combine it with the networking and information management tools in Microsoft® BackOffice to give everyone the power to contribute. The power to share information and ideas. The power to move your business forward.

See where it takes them. See where it takes us all.

For more information about Microsoft Office call free on 0800 100 104.

Microsoft Office Professional, shown here, includes Microsoft Excel, Word, PowerPoint presentation graphics program, Microsoft Access and a workstation license for Microsoft Mail (server license and software must be acquired separately). © 1995 Microsoft Corporation. All rights reserved. Microsoft and PowerPoint are registered trademarks and Where do you want to go today? and IntelliSense are trademarks of Microsoft Corporation.

Microsoft®

WHERE DO YOU WANT TO GO TODAY?™

Surreality Bites

Mainstream magazine publisher IPC — who print *Marie Claire*, *Country Life*, *Woman's Journal*, and *Family Circle* amongst 72 titles — has moved into stand-alone CD-ROM publishing.

Unzip is a joint-venture quarterly lifestyle CD-ROM with Zone UK that launches in April. Bringing together the disparate journalistic skills of the *New Musical Express*, *Vox* and *New Scientist* and the visualising and story telling qualities of Zone — the people who brought the Vid-Zone to Tower Records and HMV — *Unzip* will be the first CD-ROM magazine to be sold without a paper product to promote it.

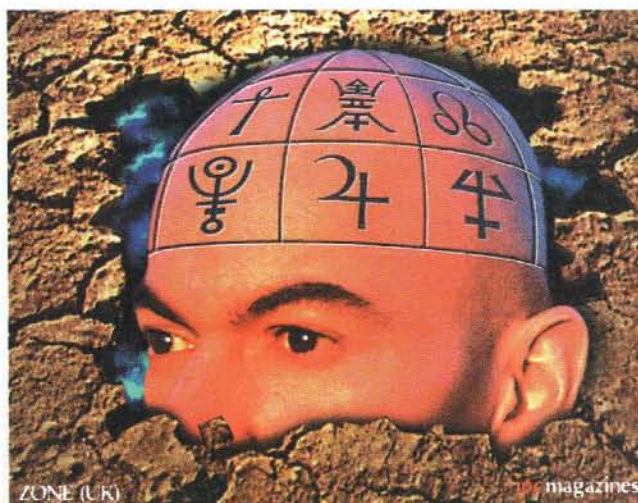
The "feel of *Unzip*", says Zone MD, Raj Choudhury, is "surrealist" — there's a lot of morphing watches in the opening pages.

But the click-on-a-brain-and-go graphics are easy for

newcomers, surreal or not, and embedded within the pages are enough secret levels to keep most people happy. At £19.99 the CD-ROM is not cheap, but excerpts will be rolled out in the Vid Zones. Zone hopes to have 100 or so of these consoles in Tower and HMV stores throughout the UK by summer,

with deals for other sites on the way.

Zone's established relationships with record labels means the music world will infect much of *Unzip*'s thinking. It's part of "Z.en" (Zone Entertainment Network) — and the name is registered, says Choudhury. — *Robin Hunt*



T I R E D

Microsoft Word 6.0
Windows '95 beta
Channel 1
Smileys
Babylon Five
Shy Mongrel
Conrad Black
ISDN
Secure Netsites
Surveillance
Marketing
Europe Online
Faxes
Manhattan
Voice Mail
Points of Presence



W I R E D

Microsoft Word 4.0
Memphis alpha
Discovery
Swearing
Babylon Blue
Black Dog
Allan Marshall
SMDS
Cardnet Online
Counter-surveillance
Supermarketing
PaddyNet
Acrobat 2.0
Swindon
Wildfire
Points of Order

Perhaps Sega will advertise on David Sunday Sport Sullivan's allegedly imminent satellite-based sports and smut service Babylon Blue. The channel has just been granted a licence from the Independent Television

Commission (ITC). **III Only Connect:** Siemens — together with new co-partners Philips — has produced a standardised phone-card for Europe. Better even than a song for Europe, the Siemens "Eurochip" card can already be used in Germany and Holland; Austria, Switzerland and the UK should follow soon. And with the partnership

Language, Thought and Flame Wars

Last year French-speaking Jose Happart was elected mayor of Voeren, a small Belgian village that became part of Flanders in 1962. Its 5,000 inhabitants are mostly French speaking; some prefer Dutch; many use English. However, Mayor Happart refused to speak Dutch whilst in office. Enter *TiLT*, a new weekly TV programme hosted by ex-MTV-VJ and Belgium's most wanted chat-box, Marcel Vanhilt. *TiLT* went live in January and used its parallel Web site to discuss the language problem.

TiLT instigated an online vote: should Happart learn Dutch; should Voeren be French-speaking, or should it be walled off and the inhabitants left to fight it out? Within a week the *TiLT* site was visited by more than 700 people from all over the world — half chose the wall.

TiLT was flamed for only using English on its pages, but will soon launch a Dutch/English program. With no mention of French that wall could yet be handy. — *Marleen Wynants*
TiLT-site: <http://www.riv.nl/tilt>

the **TiLT** site

*

talk & TV from **belgium** ?!

presented by **marcel** vanhilt

now introducing a world wide internet **vote**

this is a provisional version of a site under construction, set up for *TiLT* by **wave**

Cool Reception

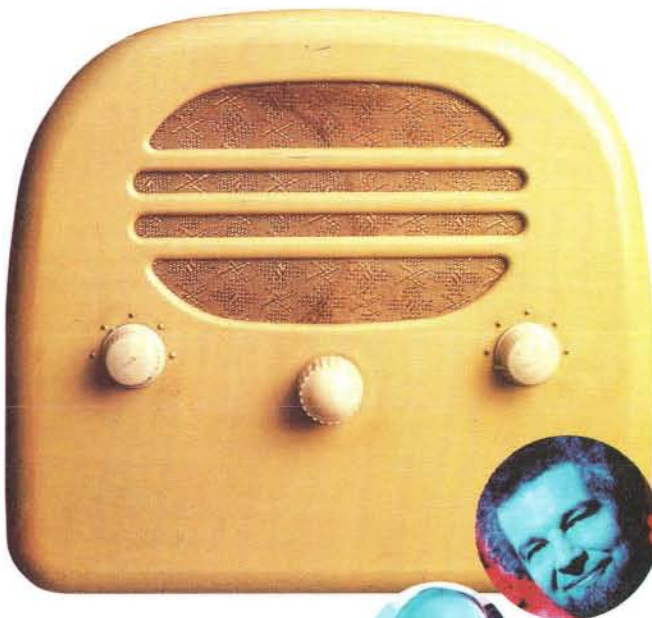
Digital Audio Broadcasting (or DAB) is the BBC's great hope to solve the FM problem – its technological limitations make it best suited to a stationary receiver in the home.

Several traffic-jams worth of car stereos have passed under the motorway bridge since FM arrived in the '50s, and mobile listeners (and bandwidth-greedy broadcasters) now demand much more. The solution? Make it digital.

BBC Radio launches its Digital Audio Broadcast service (the first in the world) in September this year. The immediate advantages are CD-quality reception, cleaner degradation, and a nationwide single-frequency network – unlike FM, DAB signals don't interfere with each other, so you don't have to keep re-tuning your car stereo as you move around the country.

For broadcasters, DAB offers the facility to compress five or six radio channels into the bandwidth currently used for one. This ties in nicely with Government policy on selling more broadcasting licences: without digital compression there won't be enough available radio spectrum for any more channels.

The project is the work of Dr Paul Ratliff, Senior Manager of BBC R&D (top), and David Witheroe, former Deputy-MD of BBC World Service (bottom). "We can't shut down all our FM transmitters overnight," Ratliff explains, "because no-one's got DAB receivers yet, and to start with they'll probably



cost around £2,000. If DAB's a success, we'll eventually make all BBC Radio digital."

Initial broadcasts will carry the BBC's five national networks, but there's potential for sending other data: station IDs, pictures, paging information, or even karaoke channels. If you like to sing along with Radio 3, DAB might be for you. – *Dave Green*

promising the same chip for all of Europe, Asia, Africa and South America, the prospects for a global phone-card cannot

be too far off. ❧ Not all information wants to be free: Somebody should have told Jake Baker, Michigan student, about *Cyber-Space And The Law* by Edward Cavazos and

Gavino Morin — chapter six just about covers everything you can and can't do in sexual space. Baker received five years for Pamela's Ordeal, a rape and sodomy fantasy he sent to alt.sex.stories, because he used the real name of a classmate as his victim. *Cyber-Space And The Law* is available from

MIT Press, Cambridge, Massachusetts 02142. Price \$19.95 (£17.95 in the UK). ❧ BlarneyNet: Already up on the World Wide Web, the *Irish Times* is

J A R G O N W A T C H

in-line

Adj, describing those who claim to be au fait with the new media, but who are not currently online. As in: Q. "Do you have an e-mail address?" A. "No, I haven't. But I'm in-line for an account very soon."

The Last Battle

Phrase to describe the technology dog-fight between Europe and the US over the provision of all types of software. Used by Olivetti chairman, Carlo de Benedetti.

Flash Crowds

Swarms of users on a network that appear, then disappear, in a flash. From a short story by Larry Niven — riots break out when thousands of people pour out of teleportation booths to see social events.

Tank girl

Individual (of either sex) who prefers driving games or flight sims to the masculine rigour of beat-'em-ups. Usage: "Dave's rubbish at *Killer Instinct*, but kicks ass on *Daytona USA*. He's a bit of a tank girl."

Bruised Rationals

The numbers that appear when a computer fouls up while converting from decimal to binary, and vice versa. For example, if it's the number 5 you're after, you'll end up with 4.999999 instead. The term was thrown around during discussions of the Pentium floating-point bug story.

E-tailing

Another dubious "E-" abbreviation. This is for "electronic retailing."

To Intel

To talk about a company's marketing or other public error to the embarrassment of the company. Hence, both CompuServe and Unisys should be "Intel'd" into market oblivion over the GIF fiasco.

Pomosexual

People who claim to be bisexual because they think it's hip but would never have a sexual encounter with someone of the same sex.

Anoraknophobia

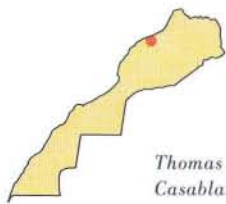
The unreasonable fear that joining the digital revolution will somehow lead one into unprompted fashion mistakes.

Netstalgia

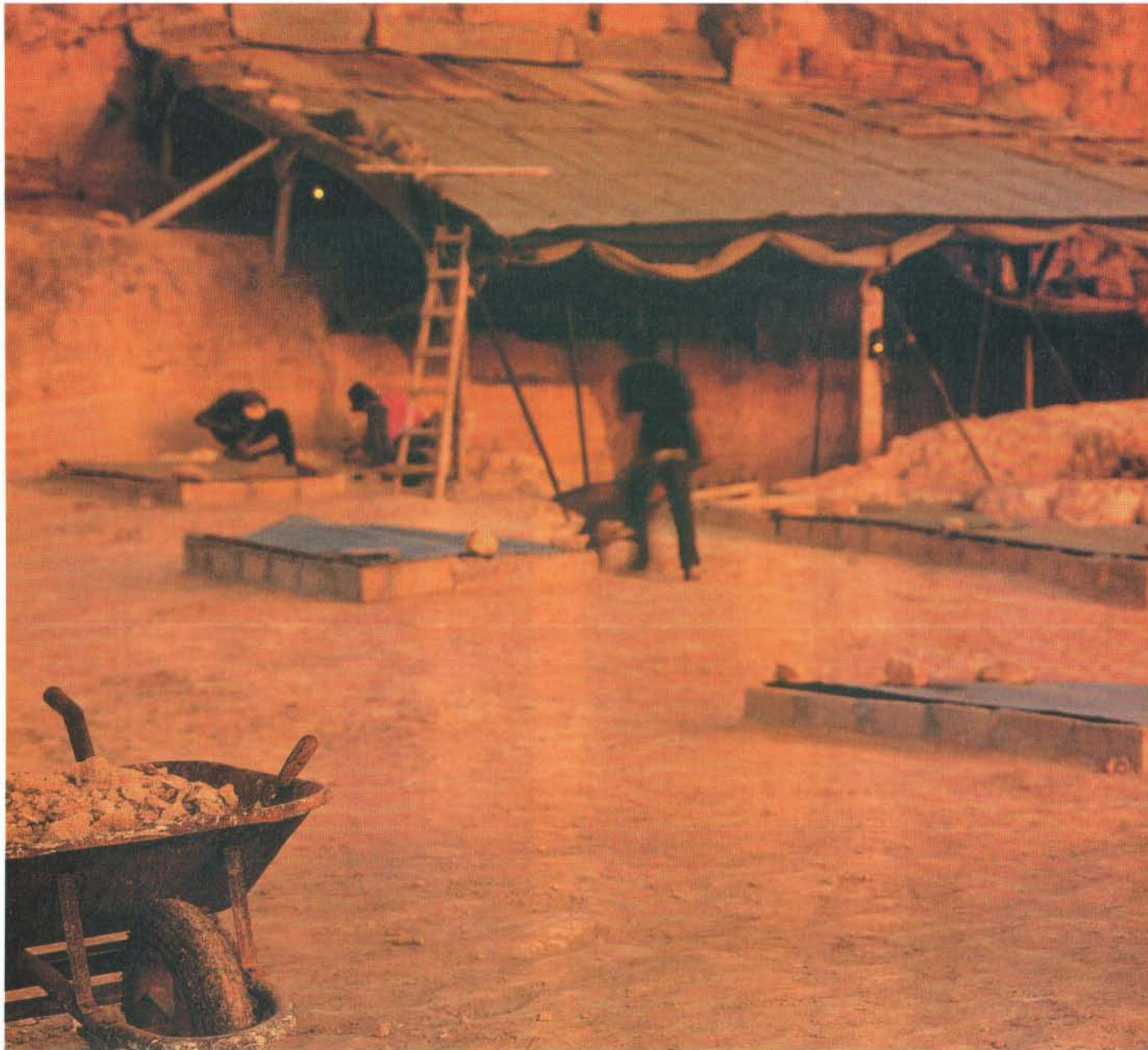
Lachrymose eulogising of extinct web-sites.

A tip o' the beret to:

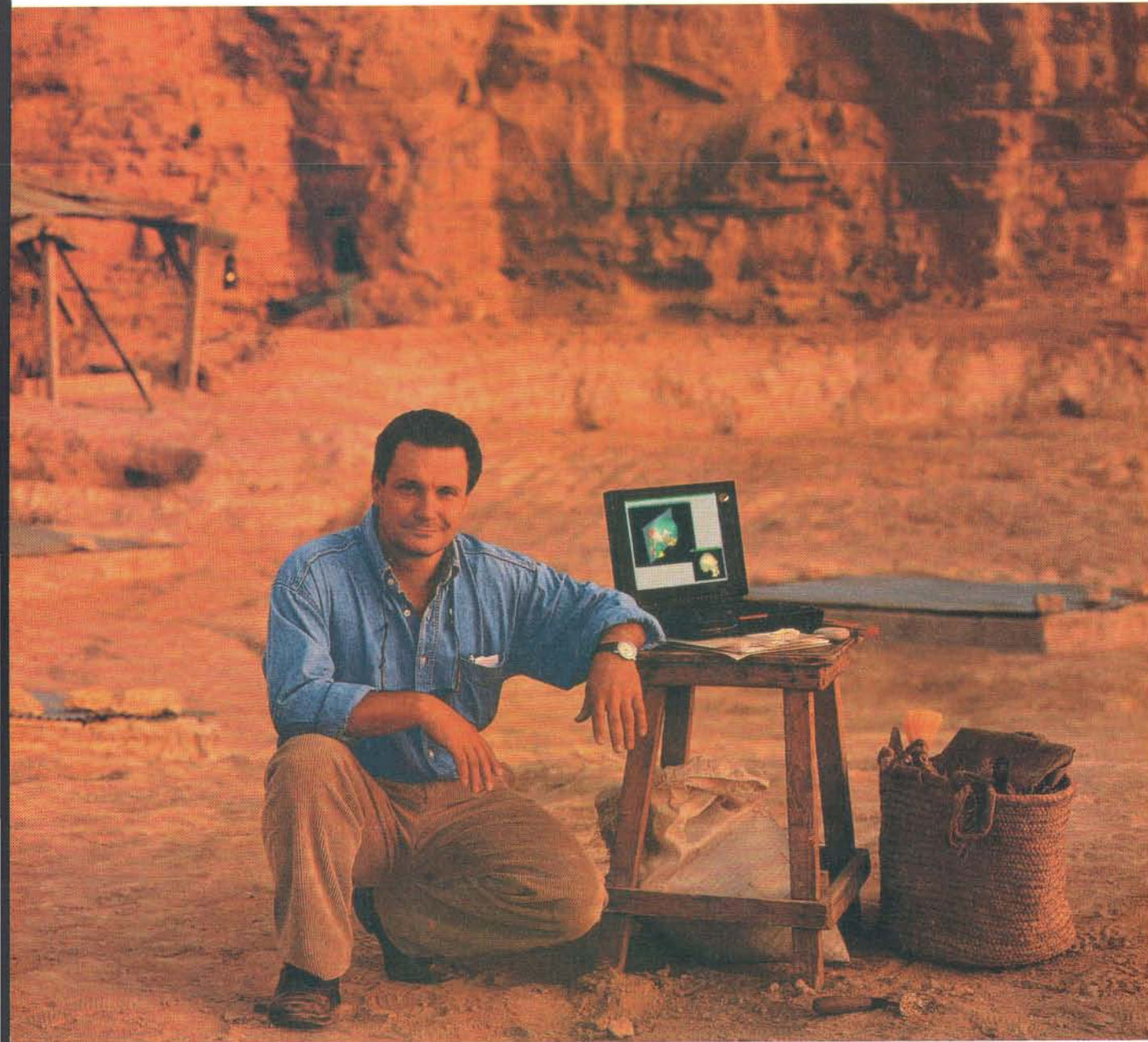
Robert Lauriston, Steve Roby, Kevin Kelly, Jessica Wing, Robin Hunt, Debbie Fellner, Daniel O'Brien, Dave Green, Robert Leedham, Stevan Keane.



Thomas Quarry
Casablanca, Morocco



IN CASABLANCA, A SLIVER OF BONE REVEALED A CHUNK OF HISTORY when Dr. Jean-Jacques Hublin unearthed a few fossilised skull fragments. Then Hublin and a team of IBM scientists fed this shattered 3-D jigsaw puzzle into a unique program called Visualisation Data Explorer. The tiny pieces helped form an



electronic reconstruction of our early ancestor, the first homo sapiens. This new IBM technology has turned time back 400,000 years, uncovering clues to the origins of mankind. What can visualisation technology reveal to you? Call 0800 675675 and see.

Solutions for a small planet



WIRED TOP 10

Bestselling computer books by weight (in kilograms)*

- | | | |
|---|------|----------------|
| 1. Inside Macintosh: AOCE Application Interfaces | 3.60 | Addison-Wesley |
| 2. Certified Network Engineer Study Guide | 2.58 | Novell/Sybex |
| 3. Network Professional Reference | 2.44 | NRP |
| 4. Inside MS-DOS 6.22 | 2.37 | NRP |
| 5. Peter Norton's Guide for DOS 6.22 | 2.34 | Brady |
| 6. Inside Word for Windows | 2.26 | NRP |
| 7. Netware Unleashed | 2.15 | Sams |
| 8. Programmer's Guide to EGA/VGA, 3rd edition | 2.14 | Addison-Wesley |
| 9. Using the Internet, Special Edition, 2nd edition | 2.09 | Que |
| 10. Access 2 Developer's Guide | 2.07 | Sams |

* The 27 volumes of the New Inside Macintosh Series (Apple Computer/Addison-Wesley) comes in at around 46 kilos (but the scales at the PC Bookshop in London WC1 couldn't cope).

From a real-life customer support department, these calls really happened — Jeff Liebermann (jeffl@comix.santa-cruz.ca.us)

"My printer stopped working."
Turn it upside down and shake out the staples and paper clips. Works every time.

"What's the fastest way to move 500 Mbytes of data daily from Santa Cruz to Los Angeles?"
FedEx.

"My dog goes nuts when I run Windows. No problem with any DOS programs."
Her monitor had a cracked flyback transformer. When the multisync monitor switched scan rates upon entering Windows, the broken flyback produced a high-frequency audio that the dog could hear.

"Well, it's black with a little red light."
Answer to: what kind of hard disk do you have?

"How do I get on the national data information superhighway?"
I ask if he has any BBS accounts. He has Netcom, CompuServe, and others. I tell him he's already on the highway.
"Is that all there is?"
I hang up.

"My hard disk won't boot."
I suggest they take the floppy out of drive a:. Later, when I arrive, they have successfully removed the floppy drive from the machine —with the floppy disk still inside.

"I've just installed Word 6.0 for Windows. It's really big and slow. How much will it cost to upgrade my machine?"
Too much.

"CanYouFixTheSpaceBarOnMyKeyboard?"

set to launch an e-mail newspaper sent directly to Irish ex-patriots around the world who have posted their address to the Web Site. The *Irish Times* hopes to follow the successes of the MIT Media Lab influenced, *India Journal*. *IJ* is based in Bangalore but targets ex-pat Bangaloreans now living in New Jersey by using net links direct to selected confectioners around the city (who laserprint copies for customers). The *Irish Times* online editor, Joe Breen, (who, promisingly, used to be the paper's rock critic), hopes to expand the distribution to where-ever Irish people have migrated. Breen already has 1000 addresses. **III Winner Takes All: Would-be**

Footballers buy nightclubs. Film stars open restaurants. But what do software millionaires do with their money? If they're anything like Peter Molyneux, founder of UK programming house Bullfrog, they build "the house of the future." Heard that one before?

Responsible for top-selling titles like *Syndicate*, *Populous* and *Magic Carpet*, Molyneux sold Bullfrog to US giant Electronic Arts in January, bringing estimates of his personal wealth to around £20 million. He says he'll be spending a fair proportion of it

on the design and construction of a futuristic high-tech home.

Molyneux's plans for the house in Elstead, a small village just outside Guildford, Surrey, include electronically darkening LCD windows, a Batcave-like underground garage, a huge array of remote-controlled devices and a network of secret passages linking every part of the building. Years of playing videogames packed with hidden rooms and secret levels have obviously left their mark.

The most bizarre feature of this home of the future will be a fully

Flushing Success



functioning shower-toilet that the 35 year old games guru spotted on a recent gadget-hunting trip to Japan. Resembling an ordinary lavatory — but with a detailed control panel — the bog of the future features an automatic lid that lifts as you approach and an extendable shower arm to wash and dry the parts that other toilets cannot reach.

"You know that crevice between the buttocks? This sorts it out," he says proudly. "I spend the rest of the day knowing I'm really deep-down clean."
— Dave Green



Doug Cooper, the New York-based novelist, is currently penning the script for a high-art VR show due to preview in Brussels this autumn. Later it will move, in enhanced form, to the Pompidou Centre in Paris.

Cooper's objective is to produce an event that will last about five minutes, offering participants the chance to dictate the development of the story — which means he needs to write 50-60 pages of text to cover all the possible outcomes.

"It's a completely different perspective," he says. "We are using multiple scripts; you will have a choice of protagonists and choose what kind of person will be speaking."

In addition, Cooper says the piece will allow objects to "morph" into others. "It is the most artistically advanced virtual-reality technology that the world has ever seen," he says.

Cooper thinks the content of VR has been "pretty drab so far"

His work will be "a conceptual art/drama, not an adventure game. It's a very rigorous piece. We're aiming high... It is very important that people who write seriously take the new media on before it gets clogged with rubbish."

The Book is Dead (again)

Cooper's interest in "architectural" works comes from his background — he originally trained as an architect, as well as "picking up a couple of degrees in philosophy."

His first "architectural" novel, *Amnesia*, was printed conventionally as a book. His second work, *Delirium*, is due to be serialised on the Internet.

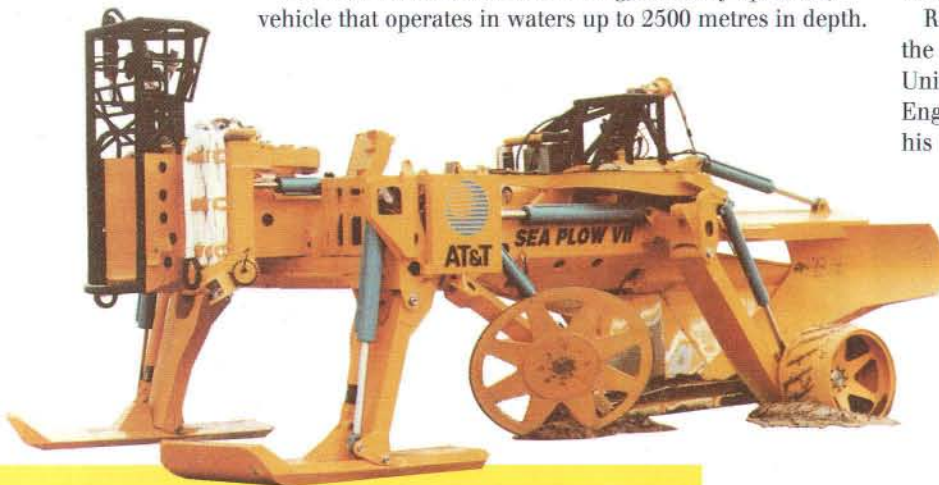
He is also shooting his first interactive film in August, called *The Arm of the Carnivore*, and has become one of a number of artists signed up by a Hollywood agents developing new media divisions. — Andrew Jack

You love to go a-tunnelling? The SMD ROV 240 from Newcastle-based Soil Machine Dynamics is a huge underwater machine able to bury pipeline and cable lines in a single underwater journey. By the time it burrows its way to the US, SMD might be a world beater. Currently, the Remote Operated Vehicle market is dominated by Perry, a Florida-based company, but not for much longer, it seems. "We are going to be much better than them so they had better watch out," says SMD's confident MD, John Reese.

The ROV 240 is a free-swimming, remotely operated, vehicle that operates in waters up to 2500 metres in depth.

And it costs a deep-diving £2.5 million. Who has taken the plunge? Japanese telecom firm KDD, AT&T, France Telecom, BT and the US Navy for starters. These are just some of the 50 contracts SMD has won over the last 12 years, each averaging £2 million, with more than 20,000 kilometres of telecommunications cables laid by SMD ploughs to date. The company has just laid 1,656 km of cable for British Telecom (Marine) as part of a new multimedia communications service to link Canada with four European countries.

Reese's father, SMD Chairman Dr Alan Reese, started the company in 1971 with a few students from the University of Newcastle where he taught Agricultural Engineering for 28 years. His knowledge today is based on his experience of farming, he says. — *Debbie Fellner*



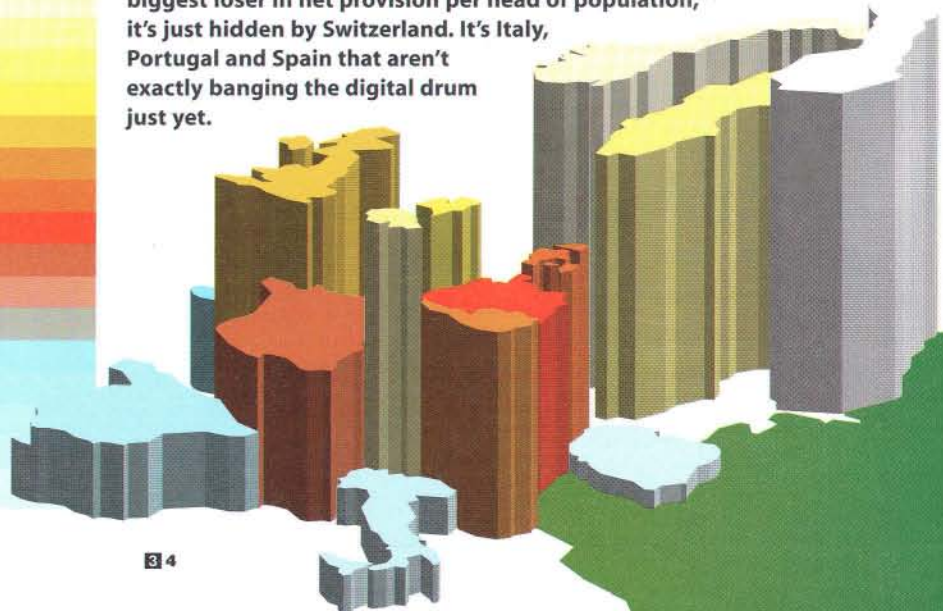
Going Underground

artists of the CD-ROM are cordially invited to submit a single floppy disk's worth of material to the Neville Brody Studios. Why? Because Brody will publish the best contributions on a series of floppies on the Digitalog Single label later this year. Entries to Neville Brody at Unit 2, Whitehorse Yard, 78 Liverpool road, N1 0QD. **III Caught** — the Net Generation: A violent intruder with blood trickling down his temple was at first ignored by net-searching students at Cambridge University until he started threatening damage. The New Museums Site was saved by an e-mail message: "security to Computer Room NOW". Enter four guards hurrying to the rescue. "It was just like the start of Star Wars where the Corvette gets boarded. The uniforms just kept pouring through the door," said one student.

E-volution:

Country	Population (000's)	Net Hosts	Pop/Hosts
Finland	5,030	49,598	101
Norway	4,333	38,759	112
Switzerland	6,910	47,401	146
Sweden	8,732	53,294	164
Netherlands	15,384	59,729	258
UK	57,956	155,706	372
Austria	7,834	20,130	389
Denmark	5,180	12,107	429
Germany	80,942	149,193	543
France	57,571	71,899	801
Belgium	10,020	12,107	828
Luxembourg	383	420	912
Ireland	3,545	3,308	1,072
Spain	39,214	21,147	1,854
Portugal	9,877	4,518	2,186
Italy	57,868	23,616	2,950
Poland	38,621	7,392	3,225

Geographic anoraks may note that Belgium and Luxembourg don't appear to be anywhere on our first Euro Map: not strictly true, actually. Benelux isn't the biggest loser in net provision per head of population, it's just hidden by Switzerland. It's Italy, Portugal and Spain that aren't exactly banging the digital drum just yet.



Three ways to subscribe:

1 mail
Fill out and post this card

2 e-mail
subscribe@wired.co.uk

3 call
01424 758 300

{ to pay by Connect, Delta,
Switch or credit card. }

GET ME WIRED

☐ I want to get **Wired** – reliably and regularly. Begin my subscription immediately, if not sooner at the discount annual subscription rate:

Individual subscriber

☐ UK (£37.80)

☐ Europe (£44.00)

☐ Rest of the world (£50.00)

Foreign subscriptions payable by credit card or by cheque through UK banks only.

Name

Address

Postcode

Country

Telephone

Fax

E-mail address

(Very important. This is by far the most efficient way to communicate with you about the magazine, periodic special offers and your subscription.)

Payment method

Wired – please save trees by charging my bank account/credit card each year at the discount annual subscription rate (currently £37.80 in the UK – see above) unless I cancel. I want to pay by:

☐ Direct debit

☐ Visa

☐ Access

☐ AmEx

☐ Delta

☐ Connect

Account / Card number

Expiry date
(Credit Cards only)

Sort Code
(Direct Debit only)

Signature

Date

Bank/Building Society name and address (Direct Debit only)

Instructions to Bank/Building Society

I instruct you to pay direct debits from my account at the request of Wired UK. I understand that the amounts are variable and may be debited on various dates. The amounts and due dates will change only after Wired UK has given me prior notice. I will inform the bank in writing if I wish to cancel this instruction. I understand that if any direct debits is paid which breaks the terms of this instruction the bank/building society will make a refund.

Tired – please mail me every ten minutes to remind me to renew my subscription.

☐ I enclose a cheque/postal order for £37.80 made payable to Wired.

It helps Wired to be able to rent our address list. We do so only to mailers that we feel are relevant to our readers' interests. To remove your name from the rental list, please tick here.

BI4959102

GIVE WIRED

☐ I want to give **Wired** – Please start a year's subscription for the lucky individual below and send their first issue as soon as possible.

☐ UK (£37.80)

☐ Europe (£44.00)

☐ Rest of the world (£50.00)

Foreign subscriptions payable by credit card or by cheque through UK banks only.

Your name and address

Name

Address

Postcode

Country

Telephone

E-mail address

(Very important. This is by far the most efficient way to communicate with you – and it saves trees!)

Recipient's name and address

Name

Address

Postcode

Country

Payment method

☐ Cheque (made payable to Wired)

☐ Visa

☐ Access

☐ AmEx

☐ Delta

☐ Connect

Account number

Expiry date
(Credit Cards only)

Sort Code
(Direct Debit only)

Signature

Date

It helps Wired to be able to rent our address list. We do so only to mailers that we feel are relevant to our readers' interests. To remove your name from the rental list, please tick here.

GI4959101

No stamp
required if
posted in
the UK

W I R E D

Freepost TN 7268
PO Box 101
Hastings
TN35 4BR
UK

Please fold along this line.

Get Wired.

Please tape closed (no staples)

No stamp
required if
posted in
the UK

W I R E D

Freepost TN 7268
PO Box 101
Hastings
TN35 4BR
UK

Please fold along this line.

Don't be the last
to know.

Please tape closed (no staples)

Three

ways

to

subscribe:

1

mail

Fill out and post this card

2

e-mail

subscribe@wired.co.uk

3

call

01424 758 300

{ to pay by Connect, Delta,
Switch or credit card. }

Spread-Spectrum Technology

Opening new territory on the radio frontier.

By Steve G Steinberg

We often rely on metaphors to describe and understand technology. But we can sometimes be convinced that the metaphor is the technology. When the radio spectrum is carved up by the international standard committees, it can look like a fight for turf between different services. So much hertz for broadcast, *this* much for telephony, and *that's* for data comms. And no trespassing.

But the radio spectrum isn't land; it's almost infinitely divisible, and, using an innovative technique known as spread-spectrum, can be unobtrusively shared. Like a multilingual party where everyone is talking equally loud, yet each person can pull out their native language from the babble, spread-spectrum allows multiple users to use the same frequency band simultaneously. Spread-spectrum technology, particularly in one of its many incarnations known as CDMA (Code Division Multiple Access), promises to increase the capacity of cellular systems by 10 to 20 times, make the wireless office feasible, and end the copper tyranny.

That's what some experts say. But others in the wireless community don't believe CDMA is practical for large-scale commercial applications. Its competitor is Time Division Multiple Access (TDMA), a tried and tested technique used by the current European digital cellular systems.

Both CDMA and TDMA are now being considered as the basis for a new Universal Mobile Telecommunications

System (UMTS). As the successor to Europe's existing standards for mobile telecommunications — GSM and DSC-1800 — the UMTS should provide the extra bandwidth for tomorrow's telecoms.

In Europe the choice of technology for UMTS now rests on the shoulders of two competing teams of manufacturers and researchers, who have been given the task of building prototypes of each system. Standards setters will then choose the best (unlike the US, where markets will decide). TDMA has the past on its side but will demand bandwidth for its exclusive use. CDMA is potentially more efficient, but is — so far — unproven in the real world.

Although spread-spectrum techniques are being considered for several uses besides cellular (such as wireless PDAs), all eyes are focused on the cellular markets. If CDMA works well, there will be a rush by the wireless industry towards the technology. If CDMA fails to make the standard, then it will find itself fighting to get a foothold in the implementation of other new services.

Current analogue cellular systems carry multiple conversations like a motorway: each conversation has its own frequency "lane." TDMA, on the other hand, works more like a train, where conversations are carried in alternating cars. Spread-spectrum technology offers two additional techniques: frequency hopping, which jumps from lane to lane to avoid obstructions, and direct sequence, which overlaps conversations on top of each

other in such a way that they can be separated out by the receiver. No matter which of the four techniques is used, the maximum number of conversations that can be squeezed into a radio channel remains the same. But spread-spectrum's resistance to noise brings it closest to that ideal maximum in our interference-ridden world.

Frequency hopping was first developed by the military during World War II as a way to avoid enemy jamming. The transmitter switches from frequency to frequency, sending for only a fraction of a second at each location before hopping to the next in a predetermined pattern known only to the receiver. The transmitter may hop onto a frequency that is being used by someone else, but most users won't even notice the split-second that gets lost to interference. By staying nimble, frequency hopping lets cellular users share the radio spectrum with microwave radio or other applications.

While frequency hopping spreads the signal by using part of the channel part of the time, direct sequence, or CDMA, uses the entire channel all of the time. The conversations of many people share the same channel, but because each bit is uniquely "tagged," conversations can be separated out by the receiver. The key is to expand each bit of the original data stream into many bits, referred to as "chips." For example, each bit might be represented as 10 chips — so pumping up a 10,000 bps stream to a 100,000 bps stream that fills

a frequency band 10 times as large. This might seem like a waste of bandwidth, but the trick is to overlay several conversations, using a clever scheme to identify each bit with a particular conversation.

Each cellular conversation is assigned a unique key (10 chips long in our example). The transmitter logically combines the expanded version of each bit it wants to send with this key and then transmits the 10-chip result. The signal arriving at the receiver consists of our 10 chips added to the chips from other conversations that occupy the same channel. By filtering the combined signal with the conversation key (and some clever circuitry), the receiver can determine which bit belongs to which conversation.

While the chances are CDMA won't immediately result in the twenty-fold increase in capacity some have claimed, it will offer significantly greater capacity than TDMA — and more room for improvement. By spreading out the signal so that it causes less interference and is less susceptible to noise, more conversations can be comfortably squeezed into the radio spectrum. As Sam Sheng, University of California researcher, points out: in the wireless industry "if you eliminate just one dB of noise, that's a couple of million dollars." ■ ■ ■

Steve G Steinberg
(steve@wired.com),
with additional research
by Peter Fletcher
(panflet@cix.compulink.co.uk)



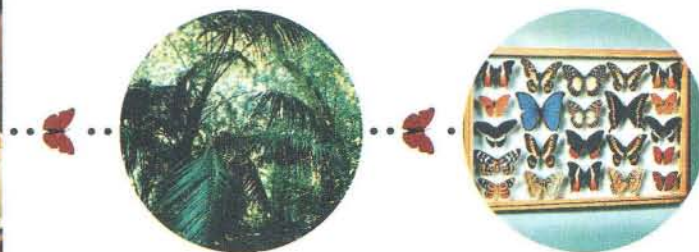
When I've got an



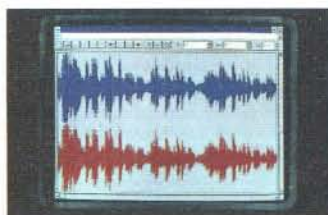
Heard any Aptiva yet?

It's this kind of jazz/thrash metal

Aptiva's whatever you want. However, whenever, wherever you want it. If you want to wake the neighbours, slide a music CD into your Aptiva and crank the volume up to eleven. For quieter pursuits, Aptiva becomes a powerful database – just the thing for keeping track of



African Blue Aptiva, my collection will be complete.



crossover thing.



your insects or invoices. From first to last, we'll help you get what you want from your Aptiva. You should be up and running in just five minutes. And our 24 hour HelpLine will make sure that it runs for a lifetime.

FOR MORE DETAILS OR TO FIND YOUR NEAREST STOCKIST, PLEASE CALL 0345 72 72 72.

IBM

There is a difference

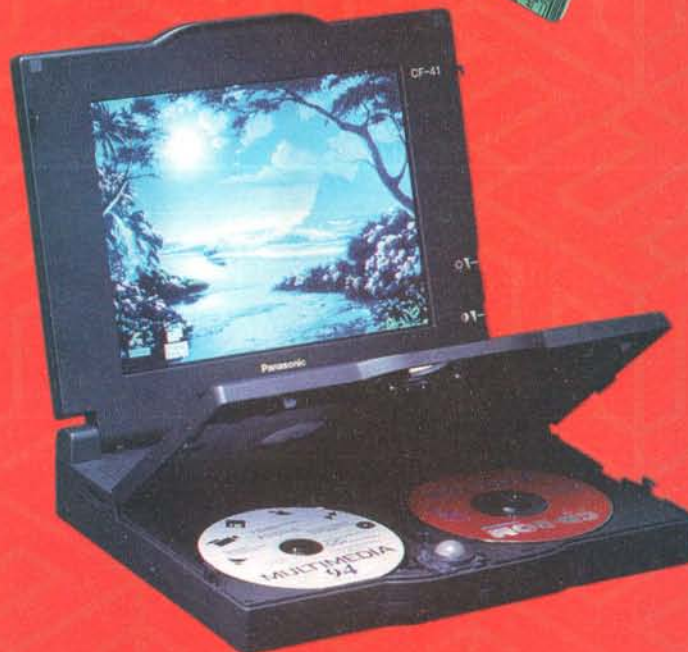
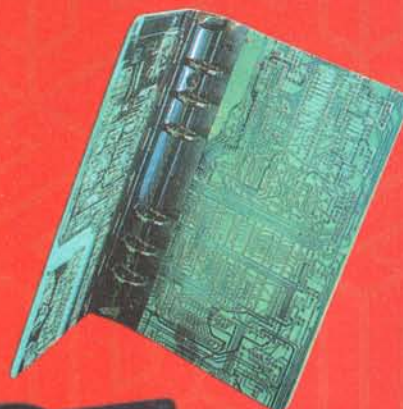
Giving the Right Answer ►

Digital answerphones are getting more and more common nowadays, but when it comes to juggling voice, fax and data, Andest's Virtual Personal Assistant has the edge. Its 1-Mbyte memory stores around 50 faxes or 30 minutes of speech, ready for you to check when you get back in. Or, if you prefer, the VPA will call you — on your mobile, your pager, or an alternative number — to play back your messages and forward your faxes. As you'd expect from any device this wired, it also works as a V.32bis modem. Virtual Personal Assistant: £399-£499. Andest Ltd: +44 (01494) 429 309.

Multimedia to Go

Taking your multimedia show on the road? The CF41 CD-ROM Notebook from Panasonic offers the perfect solution. With an internal CD-ROM drive, a 16-bit sound card, two built-in speakers, and a top-of-the-range active matrix TFT colour screen, this 3.6 kilogram (8lb) portable PC is just the ticket for playing Theme Park at 30,000 feet or displaying your latest multimedia masterpiece. It's available with either a high-end 486 or a Pentium CPU. CF41 CD-ROM Notebook: £2,799-£4,499. Panasonic Business Systems: +44 (01344) 862 444.

F E T I S H



Edited by David Green



Beyond the Grave

When computers grow too old and tired to replace paper, they can now help to organise it. Cutouts reincarnate yesterday's high-tech in a range of handy products constructed from recycled circuit boards. There's a clipboard, a notepad, and a personal organiser, all in tough high-impact plastic decorated with authentic etchings and component names. You can't (yet) specify the product your board comes from, but you are guaranteed that faint acrid smell of electronics. Recycled PCB Products: Personal organiser: £15, Clipboard: £6.99, Notepad: £5.99. Cutouts: +44 (0181) 567 2847.

Conference with Confidence

It's a pain trying to position video-conferencing cameras manually — your arm blots out the picture. Canon's VC-C1 puts an end to these awkward adjustment antics, thanks to its motor-driven rotating, tilting base. This pans up to 50° left or right, and tilts 20° up or down, (with zoom up to 8x), controlled by the handheld remote or RS232C interface connected to your PC. Ideal for teleconferences, security, or seriously spooking whoever's at your desk. VC-C1 Video Camera: £1399. Canon UK: +44 (0800) 616417.

Zap It on a Zip

When you need to take your work home with you, forget about loading up a dozen or more floppy disks, or shuffling expensive SyQuest drives back and forth. Just plug the Zip drive into your PC port and zap away. This compact 100-Mbyte portable disk drive provides plug-and-play capability right out of the box for PC and Mac users. The Zip disks look similar to a standard 3.5 floppy and come in two storage capacities: 25-Mbyte and 100-Mbyte. Zip drive: around £120 (expected UK price, from April). Iomega Corporation: +44 (0181) 899 1735.

Wide-eyed and Legless

Try the Beovision Avant for a home-cinema setup that won't dominate your living room — unless you want it to. Bang and Olufsen's entertainment system incorporates a wide-screen TV, multi-format VCR, and hi-fi speakers, all in a featureless 2001-style obelisk. The screen monitors the ambient lighting conditions, and adjusts the image brightness, colour and contrast to optimise picture quality. A black curtain glides aside at the start of each presentation, transforming the humblest soap into a special occasion. Beovision Avant: £3,300. Bang and Olufsen: +44 (01452) 307377.



Fist of Fun

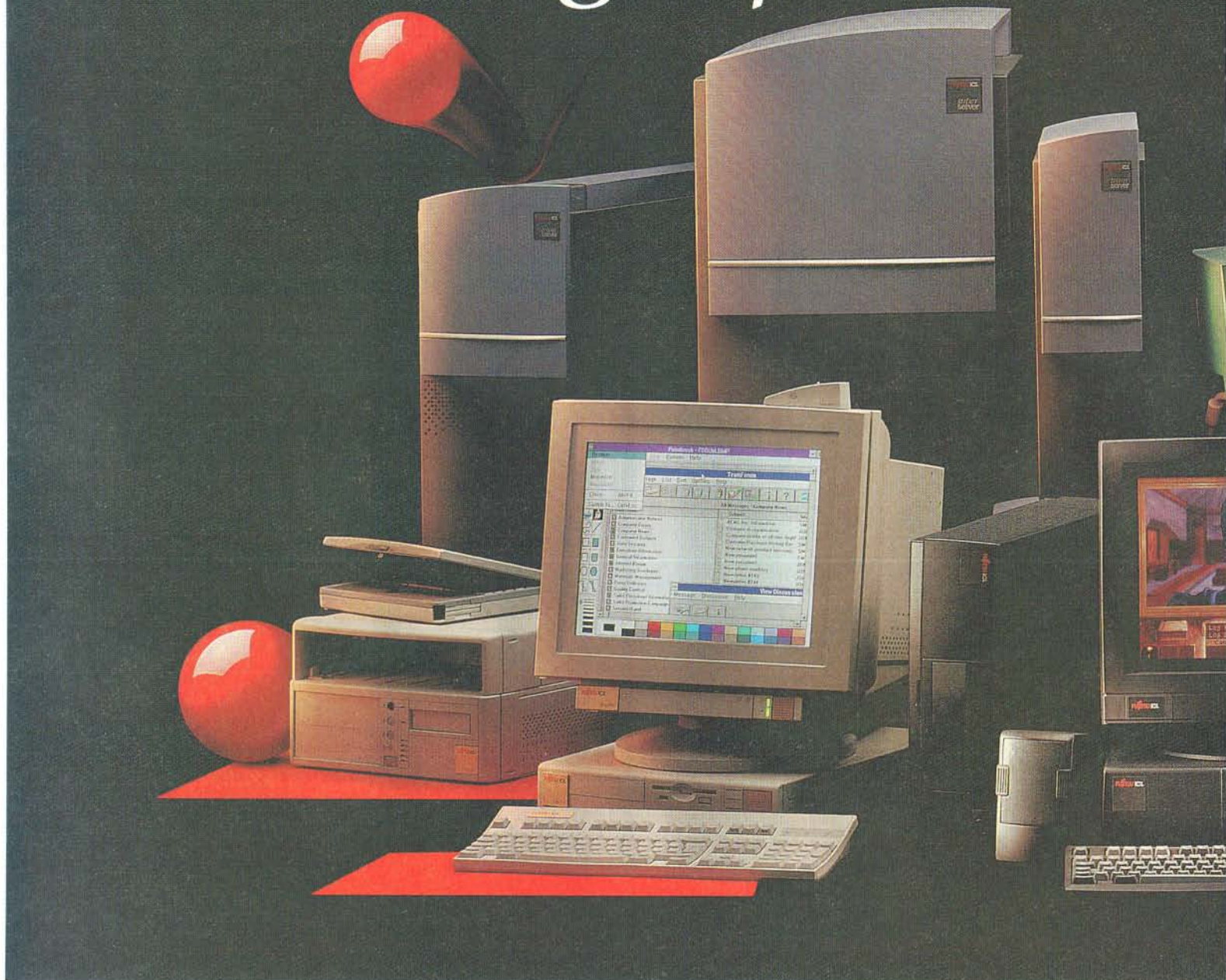
In the novelty arcade game, Sonic Blastman, you threw punches at computer-generated targets that disintegrated under your blows. With the sequel, Real Puncher, you can vent your frustration on a fresh supply of victims, including digitised images of yourself, a friend, or an unsympathetic co-worker. When you punch the pad, the face on the screen is deformed; the harder you punch, the more deformed the image becomes. Stress relief has never been this satisfying. Real Puncher: £7,500. Electrocoin Automatics: +44 (0181) 965 2055.

PERVERSION

The Dark Side is More Powerful

Most cheap video cameras are overly sensitive to infra-red, but the Maplins Sub-Miniature CCD turns this bug into a feature. By day, it provides a sharp and clean monochrome video images via its fixed-focus wide-angle lens. By night, its cluster of six infra-red LEDs cast a pool of invisible IR light, so the camera can 'see' in the dark. It's better for security than family portraits — IR makes eyeballs look like red-hot glowing coals. Sub-Miniature Monochrome CCD Video Camera: £129.99. Maplins Electronics: +44 (01702) 554 161.

A marriage of minds.



ICL makes high-performance personal computers and servers which look superb and are a delight to use. Fujitsu is renowned for its technical excellence.

Branding our products Fujitsu ICL is a token of our resolve to bring you the best of both worlds. The Fujitsu ICL brand stands for advanced technology and quality focused on the comfort and productivity of the user.

Fujitsu ICL products embody the ideal combination: Japanese levels of technology and engineering plus European style and user-centred design – at affordable prices.

ICL is a member of the Fujitsu family – the second-largest computer group in the world. So when you buy a Fujitsu ICL product, you know it's from a supplier that will be there for you, however rapidly technology may develop or markets may change.

Fujitsu ICL. A true marriage of minds.

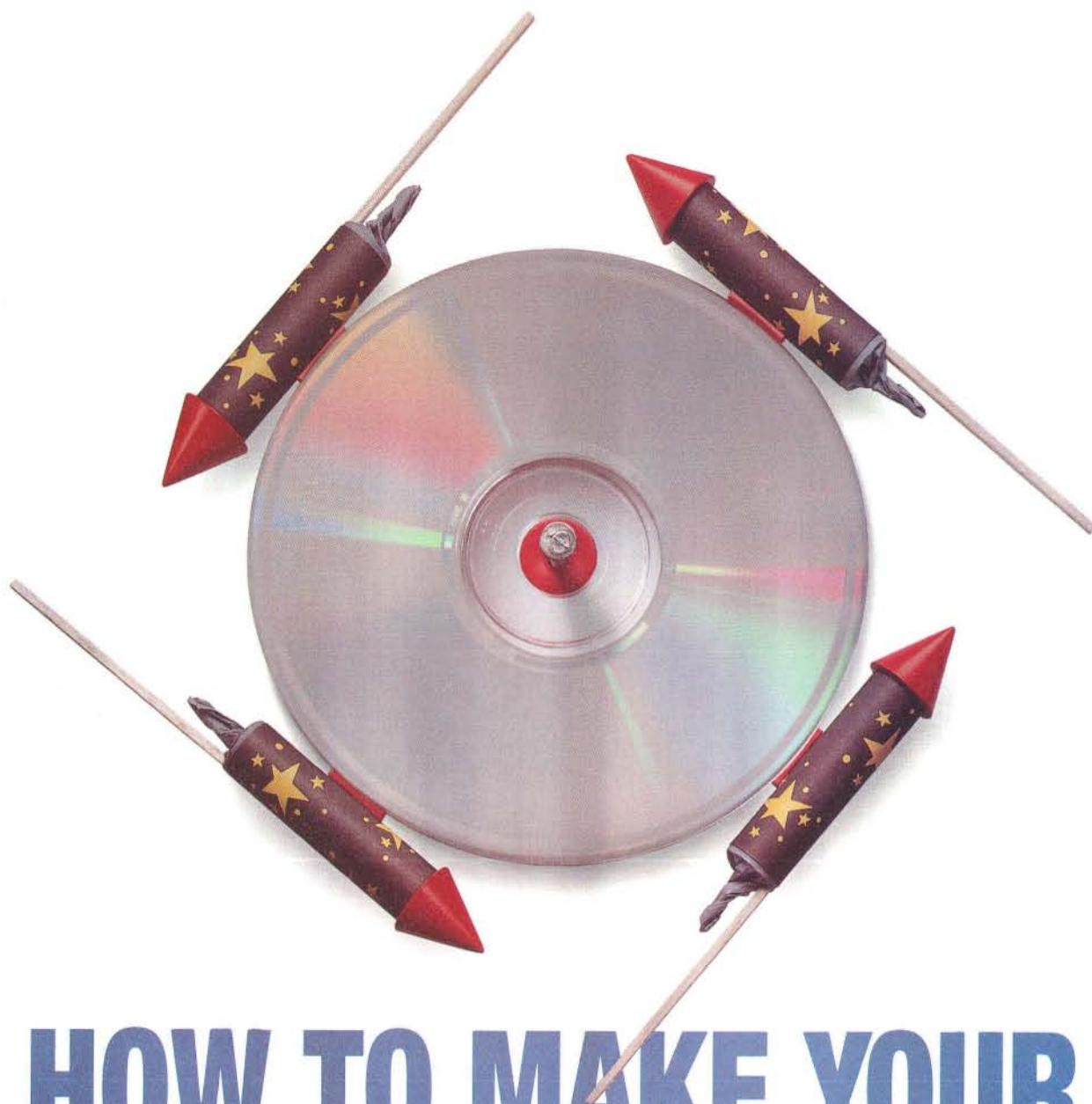


Fujitsu ICL is the new brand name for ICL PCs, servers and multimedia products.

For more information about
the Fujitsu ICL product range
please phone 0345-44 11 22.

FUJITSU ICL

ICL Fujitsu ICL Trading, ICL Volume Products, Lovelace Road, Bracknell, Berks, RG12 8SN. Tel 0345-44 11 22.



HOW TO MAKE YOUR CD-ROM DRIVE AS FAST AS OURS.

Don't even try. Your average internal CD-ROM drive can't match the DR-U104X QUADRASPIN. Blistering four speed performance.
Data transfer at 614KB/s. Access times of 190ms. Light the blue touch-paper. CALL 01753 789789.



 **PIONEER®**



Liberation technology

**America's "Magna Carta" will change
the face of Europe, argues Martin Walker.**



Some 780 years after King John was forced to sign the Magna Carta by his barons at Runnymede, there's a new version going the rounds on the other side of the Atlantic: the "Magna Carta for the Knowledge Age". Forget the old stuff about a jury of one's peers, and earls having the right to be hanged in a silken noose, the version circulated by Newt Gingrich, new Speaker of the United States House of Representatives, is about the rights of the citizen as an electron.

"Rather than being a centrifugal force helping to tear society apart, cyberspace can be one of the main forms of glue holding together an increasingly free and diverse society," claims the new Magna Carta. Pompously put, perhaps, but Gingrich has a point – and if he is anywhere near right, the wave of change that Gingrich is riding will have a far greater impact on old-world Europe than new-world America.

Gingrich's commitment to liberation technology comes from both his academic's head – the man was a history professor – and his politician's heart. "Without the information age and its alternative media ... I don't think we'd have won," he told a Conference on Virtual America after taking the Speaker's chair. "Now we have to create a Virtual Congress ... to get legislative materials beyond the cynicism of the elite."

Cynical Europeans sniff at such techno-populist exuberance. But there are lessons from cyber-Washington which they ignore at their peril.

The first concerns the fate of the original political cyber-nauts: Al Gore and Bill Clinton. Clinton was the first candidate to go from network TV to MTV and cable. He put the White House online. Vice-president Gore became virtually synonymous with the information super-highway.

So how come their opponents were swept to power in large part by the very technologies which Gore and Clinton spent so much time promoting? Mostly because Gingrich used them better. Gore is a social democrat, who sees building the infrastructure of the future as part of a larger moral duty for a (hopefully enlightened) government to lead a (presumably grateful) people down the path of progress. Gingrich, who calls himself "an opportunity conservative", is now using that infrastructure to turn Gore's moral bargain on its head – giving people the opportunity to demand from government the policies they want.

Meanwhile, back in Europe, seeds very similar to those which sprouted into Gingrich's revolt are quietly growing

– and in very fertile soil. Out of touch politicians? Look at Major or Mitterrand. Entrenched bureaucracies? Look at Brussels. Stodgy media that sustain complacent power structures? That just about sums up European broadcasting.

So as Europe's social democrats coax regulation-coddled companies into building tomorrow's infrastructure, they will rapidly discover that, in the old world as in the new, technological infrastructure is both too much and not enough. It is too much for the old order to withstand, but not enough by itself to create the new. Networks are merely the means by which information travels and conversations happen. At the end of the day, it is the talking that counts.

So what kind of talk counts most? What will political leadership consist of in an electronic age? The last time new media and new politics came together – when radio and mass-circulation newspapers entered the post-war world of the 1920s – the hot new leadership style was fascist: mass politics to suit mass media. Cyber-politics will be different – decentralised and argumentative rather than centralised and leader-worshipping. But exactly what they will be, nobody yet knows.

**Cyber-politics will be different —
decentralised and argumentative rather than
centralised and leader-worshipping.**

Some Americans argue that the new age will be a leaderless one in which government is swept along by an electronic tide of popular opinion, an age of the tyranny of the majority. Others see noisy gridlock. For while electronic communication is great for generating ideas, it is less helpful for building consensus. Cynics predict that new leaders, will manipulate the new media just as their predecessors did the old – government by talk show.

But none of these scenarios has room for Europe's status quo. The nooses that now need concern Europe's political barons and bureaucrats are not silken, but electronic – and tightening. For better, for worse, or both, the only way forward is in the footsteps of Gingrich. As Gingrich says, "I don't do by planning, I plan by doing." Europe's politicians had best get doing too. It's either that or be done to. ■ ■ ■

Martin Walker is the Guardian's Washington correspondent.

Crash course

As old certainties crumble, what sort of **education** will take us **into the future?**

By Sadie Plant

Institutional collapse was once the dream of every 1960s student revolutionary. Today it has become an establishment nightmare. But with one difference – this time the revolution is real.

Education is running into trouble at every level and in

all its forms. In Britain, structural reorganisation, economic deregulation, political mismanagement, and technological innovation have conspired to produce unprecedented flux and uncertainty in primary, secondary, and further education. But it is in the universities that the most critical implications of

this new instability are most clearly revealed. Institutions which thought themselves immune to wholesale re-engineering have found their worlds broken apart.

New ways of teaching – modules and semesters – break up the rhythms of academic work. New quality assessments disrupt academic careers and the flow of research money. A cash-strapped state increasingly expects university departments to generate much of their own income and compete for the funding they receive. A traumatised generation of British academics reflects on a golden age of stability when classes were small and jobs were for life. If they are already suffering, it is clear that they haven't seen anything yet.

"The technology that will take you all out is already here." It may sound like a line from a cyberpunk novel, but this is how British Telecom's research director, Peter Cochrane, described the implications of the telecommunications revolution at a higher education seminar last year. This is not merely a question of reform. Proliferating digital development is conspiring to challenge the education system itself.

Knowledge loses out to intelligence as hypermedia and the Net converge to challenge the mediating role of the

teacher and the efficacy of specialisation. It challenges the assumption that the goals of education are always known in advance, and that the best route to those goals is a well-planned curriculum. The Net opens up unprecedented lines of communication between students, between professors, between disciplines, and between institutions. It multiplies new links between higher education and wider culture. In a world of smart weapons, intelligent buildings, and adaptive systems, intelligent activity can no longer be confined to humans, let alone a selected few of them.

The academy retains its monopoly on accreditation and qualification. But its ability to control access to knowledge and information is no longer guaranteed. It can no longer dictate the means and ends of education. The days of splendid isolation have come to an end. Universities are imploding, melting into the circuits of culture and trade from which they were once considered immune. Information circulates on networks which are largely oblivious to academic status. As Rudy Rucker (errant mathematician and futurist) said: "If you value your information the most, then you don't care about convention. 'It's not 'Who do you know?'; it's 'how fast are you? how dense?' It's not 'Do you talk like my old friends?'; it's 'Is this interesting?'"

No one likes to confront their own redundancy, and even once-radical academics have become too well educated to question the foundations of education. A few years ago, I heard a British educationalist hold forth on curricula development and reform in higher education. At the end of his paper, someone asked him if he didn't think it was more important to question education itself. How does education function, and what is its purpose? Weren't these the questions that needed to be asked? "Oh," said the speaker, once a great protagonist of radical change, "we did all that in the 1960s."

You say you want a revolution

There was indeed a groundswell of discussion about the role of education thirty years ago, and significant changes did come in its wake. When it was granted its Royal Charter in 1969, the Open University (OU) fired a salvo across the bows of orthodox higher education in the UK. It asked for no previous educational qualifications, and it offered an unprecedented opportunity to study at home.



Forget the 1960s, the real student revolution is happening today.

ELECTROSPHERE

FROM THE MAKERS OF DUNE™ AND MEGARACE™.

LOST EDEN



VIRGIN AND CRYO ARE PROUD TO PRESENT A TRULY STUNNING PC CD-ROM EXPERIENCE. THE LOST EDEN, AN ALTERNATIVE PREHISTORIC PAST WHERE MAN AND DINOSAUR CO-EXIST. YOU ARE THE STAR IN THIS BEAUTIFULLY RENDERED FIRST-PERSON-PERSPECTIVE ADVENTURE. YOU MUST FIND THE SECRET TO ENGAGING THE HELP OF THE DINOSAURS, TO REBUILDING THE LOST CITADELS AND TO ONCE AGAIN ALLOW MAN AND BEAST TO LIVE HARMONIOUSLY.



WITH FULL SPEECH THROUGHOUT AND AN ORIGINAL MUSIC SCORE, THE LOST EDEN FEATURES UNMATCHED GRAPHIC ANIMATION WITH FULLY RENDERED THREE DIMENSIONAL CHARACTERS AND SCENERY.



YOU HAVE NEVER BEFORE SEEN A GAME LIKE THIS.



AVAILABLE SOON FOR PC CD-ROM.
WITH 3DO, CD32 AND CD-I TO FOLLOW.



SCREENSHOTS TAKEN FROM THE PC CD-ROM VERSION.

VIRGIN INTERACTIVE ENTERTAINMENT (EUROPE) LTD. 338A LADBROKE GROVE, LONDON W10 6AH. ©1995 CRYO INTERACTIVE ENTERTAINMENT.

©1995 VIRGIN INTERACTIVE ENTERTAINMENT (EUROPE) LTD. VIRGIN IS A REGISTERED TRADEMARK OF VIRGIN ENTERPRISES LIMITED. ALL RIGHTS RESERVED.

The OU provided opportunities to many people who would otherwise never have come close to university life. As a child of Harold Wilson's passion for the "white heat of technology", it also took teaching out of the lecture room and put it on cassette, video, radio and TV.

When Wilson first proposed a "university of the air" in 1963, he envisaged a network which would allow existing institutions to collaborate on the provision of distance learning programmes. Under the guidance of his Minister for the Arts, Jennie Lee, it arose as an independent university with autonomous programmes and – unlike the polytechnics which opened at the same time – complete equality with existing institutions of academe. This was a radical break with what had been a peculiarly conservative past.

While distance learning has long been a feature of the academic landscape in the more sparsely populated and dispersed regions of the US, Canada, and Australia, Britain's population density and minimal distances would seem to make it an unlikely location for any similar moves.

But if geographical distance has never been the problem for British educational practice, it has had plenty of other barriers to overcome. Ridden by class divisions and an extraordinary lack of social mobility, British education has been rigidly policed and highly selective, and few of the chosen have been working class.

Stuart Hall, a professor of sociology at the OU, has no doubt that it was the extraordinary elitism of British higher education that spurred the Open University to extend academic opportunities beyond the old institutions of what he describes as "by far the most tightly controlled educational system in the Western world".

As far as its core bureaucratic structures are concerned, little has changed. The OU intervened in some of the existing institutional structures so dear to British life, but it has also kept plenty of others in play. The BBC – itself heavily invested in public service broadcasting and already committed to its educational role – was enlisted to work on the OU's TV and radio programming, with the consequence that much of its output has done little to take advantage of the pedagogic possibilities opened up by the broadcast media.

And although the OU has provided an alternative to the orthodox educational institutions, it has done little to challenge the dominance of those that remained. To this day, British academic life defers to the

"golden triangle" which extends between the colleges of Oxford, Cambridge, and London. In what Marshall McLuhan called this "semi-feudal world", old boy networks continue to govern – not just curricula but also the distribution of resources and even the rationale for education itself. This has had a crippling impact on recent attempts at the reform of British higher education. To create more opportunities, reformers allowed polytechnics to offer higher degrees – just like universities. But now they are busily recreating a two-tier system – using a vast bureaucracy to distinguish those institutions "worthy" of performing research from those who are not.

Student choice was also high on the reformers' agenda. But even liberal educationists still cling to rigid structures of study that are slow to respond to cultural change, and allow students little room for manoeuvre between disciplines. Universities still tend to do more to inhibit learning and thinking than to encourage it. Just as kids leave school more certain of their weaknesses than their strengths, so students graduate with a head full of specialised information which, at its worst, will have closed their minds without even increasing their chances of feeding themselves.

You tell me that it's evolution

"We can decide either to move into the new wall-less classroom," McLuhan wrote in 1969, "or to look on it as the last dike holding back the media flood."

If the big educational questions were indeed posed thirty years ago, it is now high time they were raised again. The OU has begun to discuss the possibility of developing into an electronic campus, with online access to online libraries, course documents, tutors and, of course, other students. But if the OU was ahead of its time in the white heat of technological change, the dark cool machines of the 1990s do not make things easy for such large institutions to adapt with the speed that would allow them to survive.

It is increasingly obvious to students that specialist knowledge is increasingly unhelpful in a parallel world which favours versatility, adaptability, and breadth. Institutions are being forced to pay close attention to student demands for an education that might give them a chance of commercial success in a world devoid of both careers and even specific jobs. This generation needs neither training for careers nor simply education "for its own sake", but rather the confidence and ability to learn, survive, and communi-

cate in a world increasingly geared to the new discontinuities and contingencies which lie in wait on graduation day.

With access to a range of sophisticated software systems which take them into a data-dense world of which many of their teachers are barely aware, the last generations of twentieth-century students are in any case learning to learn for themselves, becoming detectives, hunting for contacts and data on the Net, and finding themselves in countless webs of connection extending across all the old divides. Such developments themselves have significant intellectual and institutional effects. The proliferation of cross-disciplinary communication is exciting new interest in connectionist paradigms that completely rework the existing ordering of knowledge into arts, sciences, and humanities, and students of, say, philosophy and cultural theory are increasingly keen – and able – to connect with their peers in areas as diverse as architecture, mathematics, and the biological sciences. The ability to navigate waters as diverse as these is an increasingly vital skill.

To the extent that universities continue to obstruct these trends, they will find themselves increasingly left behind. Established institutions will soon be competing with new and more flexible sources of intellectual skills, discussion, and information. Some will be commercial, others informal networks of co-operation. They may not be able to offer degrees, but, degrees might seem increasingly irrelevant in what William Bridges, author of *Jobshift*, a recent book on changing working patterns, refers to as a "workplace without jobs" – unless universities learn to make them matter.

British higher education is riddled with pockets of excitement about the markets and machines of the 1990s. There is a good deal of thought and discussion about both the pedagogic and commercial potential of Net trade and information distribution. Perhaps Britain's relatively deregulated economy and telecommunications industry, together with a widespread interest and theoretical prowess in computing culture, will leave its institutions well placed to adapt. But if it is to do so, then thought will have to turn to action, fast.

It is – if you can use the word in these unfamiliar surroundings – the entrepreneurs of academe that are pushing forward. Small institutions, short on funds, eager for new projects to raise their profile – and, due to the vagaries of educational budgeting, often better placed to spend money on technology than personnel – are setting up projects in

remote-learning and online tuition. In the last few months, Southampton Institute has begun to solicit students worldwide with its global MBA. "Tuition rates for Bangladesh will vary" say the administrators, without a hint of irony.

But even at big universities, change is simmering in the back room. At the University of London, BT has invested in Relate (Remote Language Teaching over SuperJANET), a project to bring remote teaching into the forefront of the communications revolution. Instead of simply putting a lecturer on screen, Relate creates a virtual classroom – which allows questions and answers, and teachers and students to scribble notes and diagrams for each other on a shared electronic blackboard. Although the system is designed for high-speed academic networks, it can work tolerably at slower speeds – say on an ISDN line. More important, the software which makes the system run is in the public domain. So, as the tech spills into the streets, the knowledge to improve it will rapidly be brought to bear. Learning how to learn better is a key element of the new education.

Should Britain's universities themselves prove slow to learn, a new force is coming to push them forward: competition. Oxford may be under little threat as yet, but less entrenched institutions are starting to find themselves competing for students with all sorts of new names. The Global Networked Academy is an international organisation, with partners scattered across the world, which teaches its courses via e-mail, and holds seminars in MOOs. Its clientele are, in many cases literally, a thousand miles away from the Oxbridge triangle, but that does not mean that its ilk do not ultimately pose a threat. If Southampton can go to Bangladesh, Harvard can come to the United Kingdom.

And it is not just the same old courses over new media. With new channels also come new skills and new content. Rhonda Wilson, a Birmingham-based arts entrepreneur who also teaches photography and the media arts, argues that art students must be taught marketing and negotiation skills. "Communication between traditional arts lecturers and education's mostly younger clientele is hitting a point of crisis", she says. "Professional development skills are going to be crucial to the future of arts education, otherwise it cannot afford to exist."

Communication and information are crucial to education, and it is clear that any changes to them will rewire the very condi-

tions of academic possibility. Undermined by the entrepreneurial, and encircled by a networked web of new technology, new ways of thinking and new ways of learning, the old academy is under siege. Using the fear of the transmission of pornography as their excuse, some British universities have now begun to monitor the electronic communications of their students and staff, and it is clear that there will be no shortage of attempts to curtail the cross-disciplinary and inter-institutional connections which are presently proliferating within and beyond the academy. But they are too little too late. Technology is bringing down the walls of the ivory tower.

We just want to change the world

Because all are concerned with learning, intelligence, and the storing and processing of information – be it in humans, machines

used means of guiding development in the right order and one step at a time. But new networks and new technology change the character of learning. Rather than a question of top-down teaching, intelligence becomes an exploratory process for which preordained canons and prescribed procedures tend to be nothing but obstacles.

This is neither a metaphorical point, nor a question of technological determinism, which is itself serial and obsolete. The emergence of parallel processing is, not surprisingly, a parallel event, which never happens in one place or time. It comes in typically piecemeal fashion, dispersed from molecular to global scale and without regard for the old differences in kind between natural, cultural, and artificial systems – between local systems of bacterial evolution, regional commerce and global telecommunications and computer networks. Parallel processors

The last generations of twentieth-century students are learning to learn for themselves, becoming detectives, hunting for contacts and data on the Net, in countless webs of connection

or both – the evolution of education, computing and communications are intimately intertwined. And as paradigms shift in one, so too will they shift in the others. Modern education has operated as the large scale, top-down engineering of artificial intelligence. It is an expert system designed for the reproduction of expert systems; a specialised and disciplined procedure intended to reproduce specialisation and discipline in knowledge. And to the extent that higher education remains premised on the paternal function of the professorial figure – handing his knowledge down through the generations, restricting access to information, and preserving a tradition still in debt to the Greeks – the academy perpetuates a top-down mode that continues to teach with authority. Its purposes are legislated in advance. Its "academic disciplines" are means of policing the historical boundaries of study and research and its educational practices are designed to ensure that these orderings of knowledge are safely reproduced.

Traditional teaching methods and purposes are in effect serial processors, central-

are now being integrated into the architecture of computer chips, and parallel processes are being discovered in the operations of all complex systems, even the human brain itself.

The new systems are all decentralised, lateral systems, functioning with no central governors and neither means nor ends decided in advance. Their increasing visibility and proliferation constitutes a generalised shift from serial to parallel which leaves no top-down machinery untouched. States, institutions, and corporations are equally vulnerable to its effects. This is the rise of markets over central planning, of teamwork over bureaucratic procedures and of small firms over large. And it certainly extends to the status of the academy, the wisdom of its procedures, and the authority of its disciplines. While the present system may survive for some time, intelligence is already trafficked elsewhere. ■ ■ ■

Sadie Plant (plantsj@novell1.bham.ac.uk) is Lecturer in Cultural Studies at the University of Birmingham and a keen explorer of the implications of the digital revolution.

Anime Nations

Out of Neo-Tokyo and into
the West, **Japanese animation is turning
mega-robots into mega-dollars**

By Andrew Leonard

In the universe of Japanese science fiction cartoons, Tokyo is so often pulverised by nuclear explosions – and then rebuilt – that the name “Neo-Tokyo” has become a cliché in Japanese animation. In *Akira*, the most interna-

tionally famous of the hypercharged sci-fi flicks, Neo-Tokyo is annihilated not once, but twice. Japan's animated futuristic fantasies carry on a mad love affair with the threats – and possibilities – of technology. They deliver a world in which giant pharaoh-headed robots are run-of-the-mill and every other teenager seems to be able to transform at a moment's notice into a deranged cyborg-demon from another

dimension. This is a world populated by humans who crawl and slither like dextrous ants among insanely complex rocket ships and space stations.

That's not all. These lurid visions comprise only one subcategory of the overall genre known in Japan as anime. In Japanese animation, anything goes: a quick glance at the range of anime programmes reveals a 50-part animated serialisation of the novel *Anne of Green Gables*, a weekly TV series depicting the struggles of a fictional soccer team making its way through the play-offs, and soap operas about high school.

Fanciful, sensually textured and hugely popular, anime is more than just an excessively indulged passion for cartoons. It is also Big Business, at least in Japan. Each month, about 100 new anime productions appear on Japanese TV, video, and film. While video and theatrical sales of anime products total ¥15-25 billion annually (£100-160 million), that's just a fraction of the hundreds of billions of yen in profits generated by a relentless strategy of cross-merchandising toys, comic books, model kits, and, increasingly, video games. In 1994, one animated title alone, *Lovely Soldier Sailor Moon*, a TV

series targeting young girls, grossed more than a hundred billion yen from its merchandise sales.

Now Japanese animators are hoping to export this cultural and economic phenomenon to the West. For an entertainment industry desperate to stuff its insatiable content maw, the dream of exploiting the synergistic potential of Japan's cross-merchandised bonanza is tantalising. Everyone is looking for the next *Mighty Morphin' Power Rangers* toy or *Mortal Kombat* video game. “Japanese animation is probably the most exportable part of Japanese culture,” notes John O'Donnell, managing director of Central Park Media, a New York-based animation importer.

Despite the increasing popularity of Japanese animation, anime imports aren't exactly greeted with fanfares. One particular film, *The Wings of Honneamise* – regarded by anime connoisseurs as a classic – barely caused a blip on the pop-culture viewing screen when it was released in US cinemas late in 1994, seven years after its debut in Japan.

In the UK, where independent distribution companies have long ago learnt to tap the sub-cultures for new trends, anime has done rather better. According to Island's Manga Entertainment, top-selling anime videos sell 15,000 copies compared to a market average of 4,500 copies. But the market is still only a fraction of the overall home-video business. Bruce Apar, editor of the US *Video Business* magazine, estimates that anime accounts for \$75 million annual business in a domestic market of \$15 billion a year. Helen McCarthy of *Anime UK* values the British market at £2.5 million, in an overall video retail market of £500 million. But both stress the phenomenal growth of this micro-niche. The worldwide domination of the anime-influenced *Power Rangers*, and the success of adult features re-packaged for children's television, such as *Battle Of The Planets* (known in its raunchier, more violent Japanese form as *Science Ninja Team Gatchaman*) point to the future.

It seems that everyone is waiting for anime to hit the mainstream.

Garage kits

Considered one of the top 10 films of 1987 by Japanese film critics, *The Wings of Honneamise* is a bittersweet, introspective tale of an incompetent space programme



Desperate to stuff its insatiable content maw, the industry dreams of exploiting anime's synergistic potential.



ACTIONS SPEAK LOUDER THAN E-MAIL.

RAV4

THE CAR IN FRONT IS A  TOYOTA

THE PERMANENT 4x4 THAT DRIVES LIKE A GTi FROM £12,899*. 2 LITRES. 16 VALVES. FUEL INJECTION. 129 BHP. DRIVER'S AIRBAG. POWER STEERING. SPLIT REAR SEAT. STEREO RADIO CASSETTE. ALARM AND IMMOBILISER. VISIT YOUR DEALER OR CALL 0800 777555. TEST DRIVE ONE WHILE YOU STILL CAN.

*Price correct at time of going to press and includes VAT but excludes metallic paint, number plates, road fund licence and a delivery charge of £430 (incl. VAT). This excludes Northern Ireland. RAV4 GS illustrated includes optional accessories available at extra cost. See dealer for colour availability. The Toyota Information Service is operated on behalf of Toyota (GB) Ltd.

staffed by slacker astronauts who are despised by society at large. It was made by an iconoclastic band of talented twentysomethings who called themselves Gainax – a self-mocking combination of a Japanese word for great with the English word max.

The core members of Gainax were teenage buddies from well-to-do families who joined up in Osaka, Japan's second largest city. They evolved into fanatic animators who slept until noon and never took out the trash. They were leather-jacketed motorcycle punks who listened to industrial bands like German deconstructionists *Einstürzende Neubauten*. Luckily, they had the wherewithal to indulge their obsessions with comic books and animation. They published their creations in popular fanzines, and saw themselves as creating a lone-wolf company that would stand apart from a country of same-same. Founding members of the group included Hideaki Anno, an animator, Toshio Okada, Gainax's master planner, and Hiroyuki Yamaga, the 26-year-old who directed *The Wings Of Honneamise*.

Gainax provides a perfect example of the interconnections between anime as an art form and as a merchandising vehicle. Before they started creating their own anime, the Gainax boys laboured long hours manufacturing what are known in Japan as garage kits. In Japan, the English word garage is used to differentiate homemade toy kits from the mass-produced injection-moulded model kits that are one of the big money-makers for the animation business. Created by a cheap "cold-casting" process using polyurethane resin plastic, mainstream kits usually are based on popular animated characters. The Gainax-built kits, however, were anything from life-size replicas of nearly extinct sea creatures to weird imaginary beasts.

At first Gainax found it easy to obtain licences to make garage kits based on established characters. But as Gainax grew more successful, the licences became more expensive and eventually it began making products based on its own characters.

The con circuit

In 1984, Gainax began organising full-scale science fiction conventions that quickly earned a reputation among fans for their offbeat events. At the 1985 DaiCon, an annual science-fiction convention held in Osaka, Gainax called on their connections to convince the Osaka Philharmonic Orchestra to attend the convention and play a medley of TV animation theme tunes. Gainax used

subsequent conventions to showcase self-produced animated short films.

One of these shorts attracted the attention of Bandai Company Ltd, a major corporate sponsor of Japanese-animated programming. In 1986, the members of Gainax convinced the Bandai board of directors to give them about ¥700 million (£4.5 million) to produce *The Wings of Honneamise*. It was, says one Gainax associate, "one of the greatest achievements of ballsy fandom in possibly the entire universe."

Fansubbing

Until recently, only a subculture of hard-

core fans devoured anime outside Japan. Called "otaku" (Japanese slang for "obsessed fans"), they are young and almost always male. If one is to judge by their prolific posting in Usenet newsgroups like *rec.arts.anime*, a sizable proportion are also computer geeks.

No one has a good explanation why otaku and anime subculture thrived on the Internet years before it exploded into mainstream popular consciousness. But there's no question that anime otaku have one of the more computer-networked subcultures around. Anime fans expend countless hours online crafting Web home pages festooned



with animated art, uploading painstakingly compiled translated scripts of anime programmes, and engaging in endless flame wars on every aspect of anime trivia.

Such obsessive behaviour is a fundamental part of what it means to be an otaku. It's also part of the reason why anime distribution companies are scrambling to diversify their product line, offering comic books, trading cards, games, and even Japanese-style hand-crafted model kits. Otaku are likely to buy the laser-disc collectors' edition of their favourite animated program, the CD soundtrack, the complete line of toys, *and* the role-playing computer game spin-off.

The move to a wider audience – needed for Hollywood to justify adopting the Japanese form – has only begun to occur in the US. But in the UK, anime has found a home with a more casual fanbase. Hollywood marketers could only marvel at Island World Productions Ltd's ability to turn their British distribution licence of Japan's only international monster hit, *Akira*, into a movement that placed anime in the public eye, and created a market for countless other titles, now available over the counter across the country.

Island World found a ready source of British fans in the large comic-reading audi-

ence who were accustomed to imports – until then, generally the American Marvel and DC characters. By riding the wave of media interest in the British comics renaissance – exemplified by Deadline's *Tank Girl* and 2000AD's *Judge Dredd* – Island World found a shortcut to respectability. And profits. So lucrative did anime appear, back in the early 1990s, that Island World, now Island International, transformed their video retailing section into a Japanimation-only operation, Manga Entertainment Ltd. Named after the comic book equivalent of anime, this group, with its aggressive expansion into Europe and America, has set the course for anime's move into international markets.

Japan's Spinal Tap

Anime's big break in the US took place in 1991 in San Jose, California, at AnimeCon, the first major North American convention solely devoted to anime and manga. With the help of Toren Smith, a comic book writer and adapter of Japanese comics for American readers, Gainax organised and financed the convention, hoping to establish a foothold in the American collectibles market.

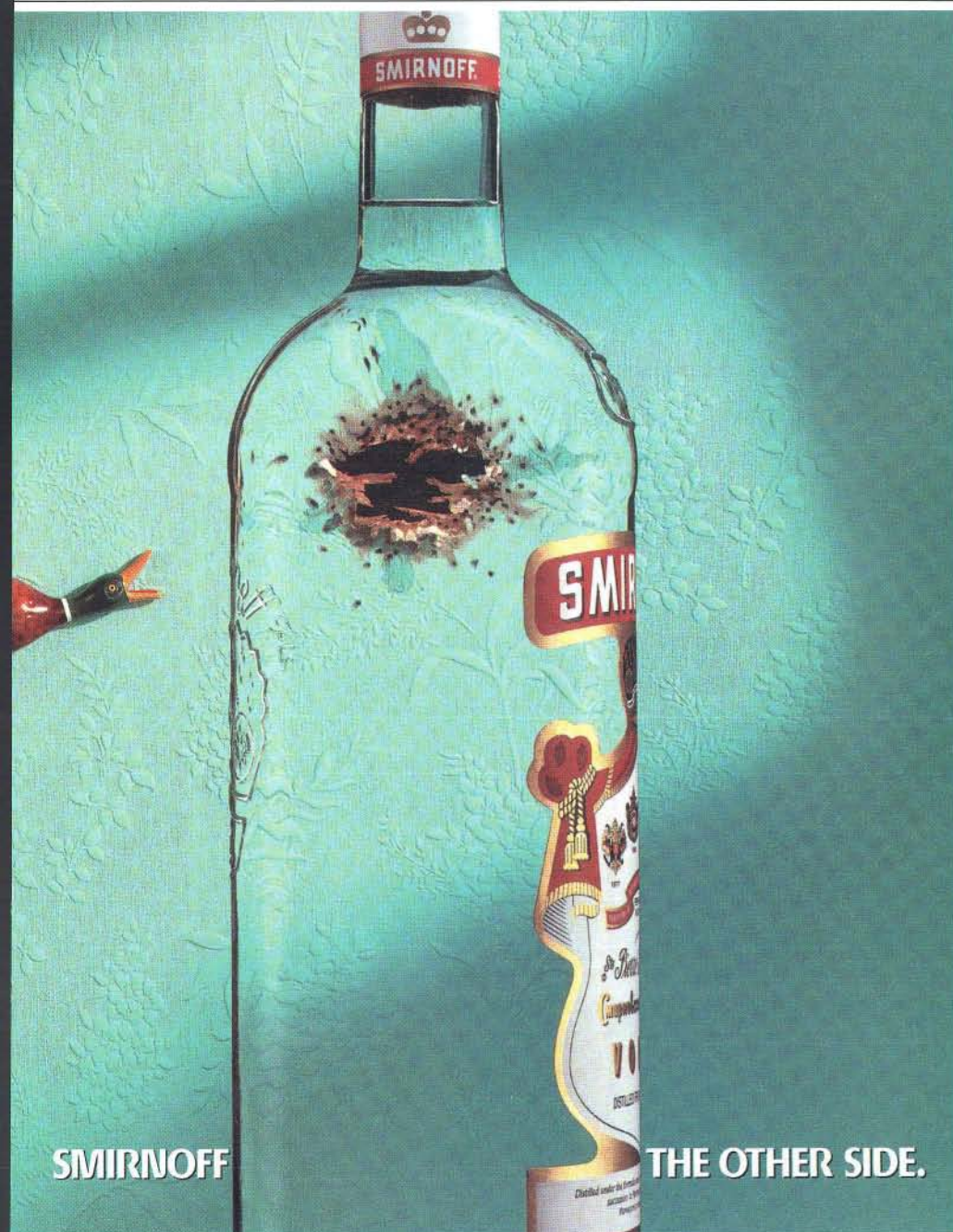
The members of Gainax were special heroes to otaku worldwide – these eccentric geniuses were former otaku themselves. In 1991 Gainax released an animated "mockumentary" satirising its own history, entitled *Otaku No Video*, that gave fans a chance to see how Gainax had started out. Dubbed "the Spinal Tap of Japanese animation" by American fans, *Otaku No Video* follows a group of megalomaniac otaku whose early activities mirror the real Gainax.

Interspersed into the narrative are a series of interviews with real, live otaku. Despite digitally altered voices and faces, they come across as malformed individuals, pasty-faced refugees from normal life.

Toren Smith, who shared a house in Japan in 1988 with several Gainax employees, says the characterisation isn't far from the truth. "Their entire life was animation. They never got up until noon, but then they busted their butts all day. They were incredibly hardworking – a group of maniacs almost completely isolated from the world."

Reign of the robot toys

The mid-1980s amounted to the golden age of animation in Japan. Anime marketers had learned to skip the stages of theatrical release or television broadcast and aim



directly at home-video consumers. Anime creators benefited, especially those who had been working within the tight production schedules imposed by television. A longer production cycle led to improved production values, and bypassing television restrictions on content allowed animators to create scenes of graphic violence or explicit sex.

Even more important, however, was the booming Japanese economy. In an era when Japanese consumers were spending money like never before, corporations such as Bandai sponsored animated programmes as a way of promoting their product lines.

For decades, Bandai has been a giant corporate monster towering over the anime industry, specialising in sponsoring robot-oriented animation linked to Bandai toys. In the late 1970s and early 1980s, says Trish Ledoux, the editor of *Animerica & Manga Monthly*, the pre-eminent anime journal in the United States, Bandai bankrolled so many robot shows and films it single-handedly ushered in "the reign of the robot toys". Today, Bandai America rakes in hundreds of millions of dollars annually as the licensee for *Power Rangers*. (*Power Rangers* aren't based on animated characters – but the cross-merchandising is the same.)

The bubble pops

In 1991, the golden age of animation came to an end. Japan's seemingly unstoppable "bubble economy" finally popped and a bruising three-year recession set in. Sales of toys and other anime-related collectibles declined. Corporate advertising support plummeted. Production studios moved offshore. For animators, the choice was stark – starve, or find another job. Even the mighty Gainax has not produced an original work of animation under its own name since 1991.

Ultimately, argues Ken Iyadomi, US vice president at Manga Entertainment, one half of the co-production deal that brought *Wings* to Britain and the US, Japanese production studios wanting to produce quality animation are forced to look abroad for new sources of finance. "Productions like *Wings* and *Akira* are no longer possible if we target only within Japan," says Iyadomi. "Everybody is seeking business opportunities outside Japan with productions created using Japanese creative personnel."

Like everyone else, Gainax – which at its height in the late '80s had grown to 80 employees – was forced to restructure. But

its attempt to sell merchandise outside Japan collapsed – a victim of its own excessive ambition, says Shon Howell, who ran Gainax's US office in 1990 and 1991. Like many other start-up companies trying to maximise a fast-breaking opportunity, Gainax grew too fast. It shed its sideline publishing and merchandising businesses and pulled back from producing original animation. Toshio Okada, formerly Gainax's boss, now lectures on multimedia at Tokyo University. Hiroyuki Yamaga, the director of *Wings*, is now Gainax's managing director in charge of multimedia business.

Today, computer games are Gainax's staple business, as well as the cause of its latest moment of notoriety. In January 1994, a strip-tease quiz game created by Gainax led to a case that set the legal precedent in Japan putting a prohibition on sales of "sexually explicit" computer games to minors.

Gainax claims it hasn't abandoned the

role-playing-games, *Princess Maker*, is now ready for release.

New realities

Not everyone is excited about Hollywood's discovery of anime. The occidental otaku are particularly worried. They're suspicious of a distribution deal between Hollywood's Orion Home Video and Carl Macek's Streamline Video to release – among other titles – a Japanese animated version of Orion's star property, *Robocop*, complete with the whole range of cross-merchandised games, toys, and collectibles. Many otaku are purists who reject any of alteration of the original product beyond subtitling. Even dubs are blasphemy. The Hollywoodisation of anime is seen as cultural imperialism at its most insidious.

But animation as an art form in both East and West has always been a product of cross-fertilisation. The Walt Disney of Japanese animation, Osamu Tezuka, credits

One TV series targeting young girls grossed a hundred billion yen from merchandising in 1994

production of original animation – and recently bought a Silicon Graphics workstation for future creative activities. Star animator Hideaki Anno is currently producing a new giant robot TV series.

The emphasis on multimedia shows that the Gainax brain trust has recognised that the profit from a successful multimedia software application – such as a computer game – dwarfs what is possible from an animated programme. And Gainax isn't the only group of animators expanding beyond animation. Katsuhiro Otomo, the director of *Akira*, has recently sold the licence to a videogame version of *Akira* to the LA-based company T-HQ Inc. The implications are obvious. The huge pool of Japanese animators could be an antidote to the lack of experienced multimedia developers in the West.

If industry observers like Carl Macek and Ken Iyadomi are correct, the international expansion of the market for Japanese animation could open opportunities for studios such as Gainax. But Gainax, which prides itself on displaying the movie know-how that game products need, may instead take advantage of an equal demand for multimedia talent. An English version of one of Gainax's most popular

the real Walt Disney as his muse. Shoji Kawamori, master of the "mechas", the giant robots so closely identified with anime, speaks of Gerry Anderson's *Thunderbirds* in hushed tones. Japanese animators claim large sections of Disney's *The Lion King* were lifted straight from a Japanese work. Toren Smith says the traditional Japanese attention to detail, and deeply textured individual frames, informs everything from MTV videos to Disney's recent animated television series, *Gargoyles*.

The reception of anime in the West is still uncertain. Will it remain a cult or will it create the next Sega? The key members of Gainax are hardly into their 30s. In their own pseudo-history, *Otaku No Video*, they take over every aspect of the animation business, pushing cross-merchandising to such a degree that they even establish their own animation-business theme park, OtakuLand.

Their message is simple: They aren't finished yet. ■ ■ ■

Ftp to venice.tcp.com and remus.rutgers.edu.
Or Web surf at <http://server.berkeley.edu/CAA>.

Andrew Leonard (aleonard@well.sf.ca.us) is a freelance writer based in Berkeley, California. He specialises in cyber-Asia.

Life in the digital city

Pedal down a digital bike path, trawl parks and museums, and find yourself a virtual spouse in new Amsterdam

By Peter Hinssen

There are a thousand stories in the Digital City. Some intertwine with the real life of Amsterdam, whose landmarks – parks, museums, town hall and red-light district – are also those of the Digital City. But there are more. The inhabitants of the Digital City, some of whom have never set foot in Amsterdam, have colonised the subways, where they walk in the fantasy rooms of an underground empire and argue politics in imaginary coffee bars. They have created works of art unseen, and unseeable, by light of day. For *De Digitale Stad* (DDS), as it is known in Dutch, the language which is both its lingua franca and, quite literally, its firmament – is an imaginary world which exists within a battery of

inhabitants. Its streets and alleyways are links of hyper-text strung through the World Wide Web. And on a good month about 100,000 tourists pass through.

Now the Digital City faces issues all too familiar to real-world boom towns. What sort of services should it provide its citizens? How can it pay for them? What is the proper relationship between public authority and private enterprise? It is experiencing all the boosterism, argument and angst of gold-rush towns filled with dreamers, world-changers and those who just wouldn't be anywhere else.

And, lost in it all, trying to calm, co-ordinate and control its landscape are the beleaguered councillors of old Amsterdam – enlightened civic leaders, who are only now realising that rather than bringing their city into the 21st century, they have reclaimed from the sea of the infosphere an entirely new territory with problems and demands all of its own.

Low overhead

The town hall is the oldest building in the new Amsterdam, located in the *Overheid*, the government neighbourhood, the very heart of the pre-WWW digital city. "Certainly in the beginning, a lot of the services in the city were civil services and links to real-world city organisations," says Marleen Stikker, one of the founding members of the DDS. "The idea was to create easy access to information about the city and its services."

The *Overheid* is still one of the most popular areas of the Digital City. Hundreds of people roam through each day, and the installation of Web terminals in libraries and public buildings has made the Digital town hall accessible to more than the info-elite. Initially, the *Overheid* is the very model of bland municipal website: city-government press releases, links to city records, and the obligatory homepages of all the current city officials – although it's not clear who would want to download a digital picture of Amsterdam's mayor Schelto Patijn.

However, the popularity of the *Overheid* derives from its ease of access. E-mail can be sent to town hall officials, or to the political factions in the council. Concerned citizens interrogate their representatives on the issues of the day, every day. They talk of the upkeep of the *Vondelpark*, the city's largest green space. They pester them with queries on Holland's convoluted tax

The Digital City is an imaginary world which exists within a battery of computers humming gently in an Amsterdam basement.

computers humming gently in an Amsterdam basement.

The Digital City was founded just over a year ago as an experiment in civic networking. To make it easier for citizens to be citizens, the City of Amsterdam and the Ministry of Economic Affairs financed proposals by two groups – De Balie and *Hacktic* magazine – to create a text-based bulletin board to provide hints on taxes, swimming pool opening hours and other useful local information. De Balie is an Amsterdam institution that tries to heighten public awareness by sponsoring public debate on subjects from politics to art, while *Hacktic* is, well, *Hacktic* – Northern Europe's voice of the hacker, the fanzine which made its name cracking PIN numbers, and now, rather more civic-mindedly, supplies the know-how to build a virtual Amsterdam.

The Digital City began as a text-only bulletin board system, but almost immediately the original system was replaced by a World Wide Web server, and dial-up access to the Digital City was augmented by the Internet. Then the citizens took over. Today the Digital City has 10,000

laws. They argue back and forth about Amsterdam's proposed trans-formation from city to province. From the *Overheid's* pages, they visit the Dutch Parliament to track the progress of new laws, and monitor their MP's voting patterns. Then they return to *Overheid* to discuss and argue again. And, like all e-mailers, they are more than upset if their questions go unanswered.

Indeed, many virtual Amsterdammers are starting to provide answers on their own. Perhaps the greatest success of the Digital City, and no doubt the driving force behind its booming growth, is the ability to capture the enthusiasm of its citizens. Future historians may argue about what distinction, if any, can be made between the private passions of digital citizens and their public service, but

business or see a show before going back to the real-life city – a few are beginning to move their social lives online as well. The hub of this colonisation is underground, in the city's Metro, where about 2,000 of the Digital City's 10,000 inhabitants mix and mingle.

Why a Metro? Mostly because it was Michael Van Eeden, or Mieg as he's called underground, who built the social centres of the Digital City. Mieg is fascinated with subterranean worlds. "I always liked subways. They have a dark and sinister side to them. You don't have a clue what goes on in those deep-rooted, pitch-dark canals, or who lives in there."

The Metro MOO is a text-based world, transitory like all MOOs, flickering on and off depending on how many citizens are online. "We've tried to expand the regular MOO by adding a lot of WWW-like support," says Mieg. "A lot of Digital Citizens couldn't get into the text-based MOO environment – but they all wanted to live in there." And so, courtesy of the World Wide Web extensions, homes – or, at least, home pages – are being built.

The Metro recently celebrated its first marriage. Like most Dutch couples these days, the bride and groom wanted to live together for a while before tying the knot, just to make sure that they were right for each other. So they built a joint home page, and moved in. When they were sure of their compatibility, they invited about 40 close virtual friends to

the wedding ceremony – and drank virtual champagne at the reception, which made their typing go all garbled. The happy couple has never met in the flesh; nor do they particularly want to.

Above ground, 200 Digital Amsterdammers have set up World Wide Web home pages in the city. There is a new digital housing development centre, just off the Market Square. Special "construction workers" provide help to those who lack the knowledge to crank out the HTML code their houses are built from.

Gallery row

When communities settle, they begin to demand amenities. They want shops. They want culture. And as this is a virtual Amsterdam, it was culture that arrived first.

Art is all over the real Amsterdam, from

neo-hippies smoking hash in the coffee houses, to the Rembrandts in the Rijksmuseum. Publishing, creative arts, performing arts – they're all here. And in the digital version too. The Art & Culture building of Digital Amsterdam is stuffed with art institutions: media houses, artists' collectives, electronic literature and theatre companies.

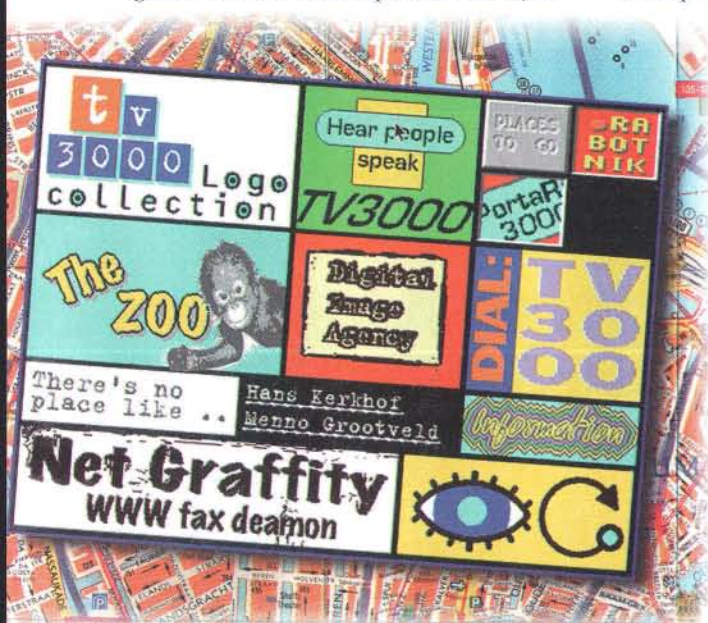
The nucleus of the digital art community is the Temporary Museum. Like a real museum, you can browse through collections of art and objects, arranged and selected by the museum's curator (or *beheerder* as the anonymous curator prefers to call himself). Ironically, the Temporary Museum is less temporary than its real-world counterparts. When an exhibit is over, it is simply moved into a warehouse area, where it remains less prominently on display. And as art provides an identity to the virtual Amsterdammers, so civic pride is a prominent feature of the gallery. One section of the museum displays an ever-growing collection of ever-more-futuristic versions of Amsterdam's twin-lions coat of arms, all contributed by local artists and would-be artists.

The new town boasts more than just visual artists, too. Take Marcel Bullinga, the city's resident novelist. His new book, *Roes der zinnen* (*Flush of the Senses* in English) is published and sold exclusively in the Digital City – using experimental DigiCash.

Bullinga had written eight or nine books and publications when he decided to take a break to roam the world, and make a living as a model and exotic dancer. The Digital City lured him back both to Amsterdam and to writing. "It was the atmosphere of the place that I liked, and I had the idea that here you could create a whole new approach to literature." His book describes his adventures during his literary sabbatical. The first and last chapter are freely available online. If you want to read all the juicy bits in-between, though, you have to fork out some e-money. Because, after all, when a city gets big enough, everyone has to make a living somehow.

Down-town

In the Digital City, as in any other, public virtues are ultimately financed by private profits. For the most part, civic-minded activists donate the time required to create the landmarks and organisation of the Digital City. But as the city grows, it is becoming increasingly expensive for the real



the Digital City provides many examples of ways in which, by following their individual interests into the digital realm, netizens have enriched the lives of their fellows.

One of the most singularly Dutch is *Het Digitale Fietspad*, the digital bike path, run by Michiel van Loon, and advertised by the biking sign from the main square. "It's no use having an electronic highway without bike paths. After all, most of our citizens use a bike to get around in the real world," says van Loon. "So we decided to make room for them here too." The digital bike path has routes through the Alps for mountain bikers and repair shops in the Low Countries for virtual commuters.

Life underground

While most of the Digital City's inhabitants are commuters – coming into town to do bus-

Amsterdam to maintain its digital public space. In 1994, its first year, the budget was 450,000 guilders (£170,000) and this year it will nearly double, reaching 800,000 guilders (£300,000). It will soon become more than Amsterdam can comfortably pay from its own pocket. So the Digital City is being forced to redefine both the services it offers and the sources of its funds.

In the beginning, everything was available and everything was free. The City of Amsterdam financed the construction of the digital city. For six weeks, everyone could get online for free, thanks to a deal with the local telephone company, and enjoy full Internet access. After the trial period, citizens could still get into the Digital City for only the price of a local phone call, but ventures into the cosmos of the Internet were severely restricted. At the same time, the Ministries of the Interior and Economic Affairs stepped in to help Amsterdam with the project's finances.

A consequence of the restrictions on Internet access was that many of those lured into the city signed up with commercial Internet service providers to maintain full net-roaming privileges. And the Internet service provider most chose was a new venture set up by veterans of *Hacktic*, catchily called xs4all. Some in the Digital City grumble that the ex-hackers have made the switch from publicly financed idealism to privately profitable entrepreneurialism with worrying speed. But the more heated arguments concern that inevitable bogey-man of online worlds: electronic commerce.

Over the next year or so the Digital City plans to diversify its sources of income. From being entirely supported by government money and volunteer labour, it hopes soon to get 30 per cent of its revenues from government, another 30 per cent from non-profit organisations, 10 per cent from private donations and – oh, the horror – the remaining 30 per cent from commerce. The Digital City has decided to set up a shopping mall, called the Market Square, by subletting parts of its premises for commercial use.

"We had to, although it created a substantial discussion among the people that run the City," says Felipe Rodriguez, the city's *Hacktic* co-founder. "We had to avoid charging citizens to move around, and if that means putting up a few stores, so be it." Correct decision, no doubt. But the results are something of an anticlimax. At

least in the first two months after the Market Square opened for business, merchants did not change the Digital City for better or for worse – because they didn't move into it.

Amsterdam is a serious shoppers' city, with great window-shopping, fun browsing and lots of good stuff to buy. The Digital City, by contrast, has five shops. Two are, predictably, a computer bookstore and an electronics retailer. Another is one of the other founders: art-promoter De Balie. One offers nature holidays. And the last, and most enthusiastic, is Play it Again Sam, a distributor of not-quite-mainstream music and promoter of assorted concerts in Europe. "This was an ideal medium to get directly to the people that listen to our records," Sam's

"It's no use having an electronic highway without bike paths," says Michiel van Loon.

"So we decided to make room for them here too."

owner reports, proudly.

If Sam is going to keep playing such a happy tune, however, the merchants in the Digital City may well have to become more innovative. There is no commercial e-cash here, and little serious attempt to create real online shopping. The Market Square mostly just tells people about what they could buy if they got up and went into the real town. The Digital City has yet to offer any domestic produce. If its trade balance remains in the red, the future for New Amsterdam could start to look bleak.

Ghost town

As a tourist, accidental or otherwise, one's initial reaction to the Digital City is simple amazement. In just a year, a community has been created in the cyber-wilderness. It's a busy place, a boom town for those lured by the Internet gold-rush. But like all boom towns, the Digital City is both more and less than it seems. The Web pages of its hopeful inhabitants bear more than a circumstantial resemblance to the false-fronted buildings that lined the streets of frontier towns. They strive to give an impression of solidarity.

So what can we learn from the Digital City? Well, in a sense the original experiment has worked. As an alternative medium for Amsterdam to provide government services

and information to its citizens, the Digital City has fully established its worth. It has evolved into a politically useful barometer for the authorities to measure the popular reaction to such changes as Amsterdam's transition from city to province.

But the City has strayed far from its founders' idealistic hopes. It hasn't created a true digital democracy, and it hasn't brought a new equality and openness to politics. The Digital City does not represent old Amsterdam. The Digital City's last census showed its average inhabitant to be around 30 years old, highly educated, and a voter for D66, the liberal democratic party. All are by definition extremely computer literate. So the new Amsterdam does not represent anybody but itself. And even with

its independent spirit, it has yet to prove itself autonomous.

Things happen fast on the electronic frontier. If, in a year or two, life is ebbing from the Digital City, and it has turned into a virtual ghost town, the last and most important lesson to learn from it will be that the frontier will never be settled. There are simply too much enthusiasm, too much hope and too many opportunities out there.

The frontier keeps moving onwards – and outwards. The Digital City's founders are already setting their sights beyond Amsterdam. Their goal is a network of digital cities all over Europe, connecting digital citizens across state and cultural boundaries. Eindhoven is the next Digital City planned, and talks are underway with other communities. Martine Brinkhuis, who is co-ordinating the expansion, reckons that Digital Amsterdam has much to teach virtual settlers. "We pretty much have the know-how available, so porting it to a different city will not be that hard." The hard part, she reckons, is getting citizens to participate. But if this Digital City is anything to go by, the hard part may be holding them back. ■ ■ ■

URL to the Digital City: <http://www.dds.nl/>

Peter Hinssen (Peter.Hinssen@interack.be) is a freelance writer and multimedia researcher.

Reward Systems



Smile and your computer smiles with you

– at least that's the claim of the
Princeton Engineering Anomalies Research laboratory

By Rogier Van Bakel

"Come on, sweetheart, you can do it. Oh, now, show me what you're made of. Thaaaat's it!"

I am alone in a room with a woman I met barely an hour ago. She is talking softly, seductively, in a voice that is both sweet and persuasive. Not to me, mind you. She is

directing her words – saccharine mutterings that other people might reserve for a sick child or a cute puppy – to an ugly electronic box with a red digital display. She is Brenda Dunne, the manager of the Princeton Engineering Anomalies Research lab-

the research shows a tiny but statistically significant result that is not attributable to chance. The volunteers didn't even have to sweet-talk the machine into its deviations the way Dunne has just done. Some of the "operators" merely stare broodingly at the display, focusing their minds to beat the silicon into submission. Others let their thoughts wander or read a book. Two-thirds of the volunteers have been able to affect the REG in the direction they had intended (to select more high or more low numbers), while only half of them would have produced those results by chance. A few of them have produced results that, when expressed in a graph, are so distinct the PEAR scientists can recognise these volunteers' patterns or "signatures" at a glance.

The volunteers achieve amazing effects, even if they are on a very small scale. "The operators are roughly altering one bit in 1,000," explains Michael Ibison, a British mathematical physicist who has come to work for a year at PEAR after stints at Siemens, IBM, and Agfa. "That means if you had a coin toss, psychokinesis could affect one of those coin tosses if you tossed a thousand times."

The metaphor is apt. The REG, in its simplest form, is nothing more than an electronic coin flipper. It is designed to come up with as many heads as tails. That is precisely what the carefully calibrated instrument does when humans leave it alone. But sit an operator in front of it, and the REG obligingly produces slightly more heads than tails – or vice versa, depending on the operator's intentions.

If that sounds weird, then consider this: you don't have to be in the same room as the REG to get results. Or, for that matter, in the same city, or even country. Volunteers as far away as Hungary, Kenya, Brazil, and India can influence Princeton's REG just as if they were sitting three feet away.

What's love got to do with it?

Another surprising finding occurred when Dunne and her team asked couples to interact with the REG. The effects generated by two people with an emotional attachment were much larger than those produced by an "unattached" pair of operators.

The PEAR team uses other instruments to get similar, perhaps even more striking, results. There's the Random

oratory, and she is giving me a demonstration of how she might "will" a random event generator (REG) to come up with more high than low numbers. She is somehow using the power of her mind to achieve it. And the power of her voice. She coos. She crows. She coaxes.

In case you were wondering: Dunne, a developmental psychologist, is far from the mad scientist type. But she is doggedly determined to prove what most physicists have never thought possible: that the human mind can change the performance characteristics of machines. Mind over matter, as it were. Sound crazy? The work at the PEAR lab has consistently shown that "normal" volunteers – not people who profess to have any psychic powers – can influence the behaviour of micro-electronic equipment with their minds, with their consciousness. This is done without the benefit of electrodes and wires – and without anyone being permitted to give the machine a good whack. Nearly 100 volunteers have conducted 2.5 million REG trials during the 15 years of the lab's existence, and

**Do we dare
theorise
that love has
a palpable
influence
on random
noise?**



Mechanical Cascade known as Murphy (after Murphy's Law), a 9-foot high vertical contraption that drops 9,000 small polystyrene balls from a spout at the top onto a grid of 336 evenly spaced nylon pegs. The balls land in a horizontal row of 19 bins at the bottom, in a distribution pattern that looks like a bell-shaped curve. Volunteers can "think left" or "think right," and a majority of them can cause a modest but measurable shift in where the balls land. A more recent experiment involves operators trying to control the swing of a custom-built pendulum. In another one, they're seated in front of a computer displaying two superimposed pictures, and are told to try to suppress one and bring the other to the foreground.

Sceptics have examined the lab's instruments, its data-processing software, its protocols. Environmental, non-consciousness-related influences such as temperature differences, passing traffic, earth tremors, and vibrations from a nearby machine shop have been ruled out as a cause for the anomalies. Other scientists have been able to replicate PEAR's experiments – just as PEAR's own work builds on other academic research. But the Princeton University lab has amassed so much scientific evidence of the consciousness effect that, by sheer quantity of data, it has become the foremost player in this field.

If the empirical proof seems to be strong and solid, the theoretical part – how does it happen, and what does it mean – is uncharted territory. That doesn't stop Brenda Dunne from developing some theories of her own. She points to a clipping on the wall of her chaotic office. It's a cartoon of two scientists. One says: "I actually prayed to receive this grant money, you won't tell anyone, will you, Charles?" After we've finished laughing, Dunne strikes an earnest note.

"It's human nature to pray, to hope, to desire. Where does this fit into a scientific world view? How can you talk about a reality that has no place for human consciousness – the very human consciousness that created that world view in the first place, the consciousness that designs the models and observes the data?"

Dunne has come to believe that human consciousness establishes a "resonance" with the physical world that can reduce some of the randomness around us. "One form of this resonance is what we know as love," she says, referring to the experiments with the bonded-pair operators. "Do we dare theorise that love has a palpable influence

on random noise? I don't know. I think I would be willing to at least raise the question. This emotional bond, the 'being on the same wavelength,' somehow reduces the entropy in the world a little bit. And random processes seem to reflect this reduction by showing a more organised physical reality."

Heresy versus recalcitrance

It's easy to scoff at such notions – call them scientific heresy, or new-age drivel. And, to be sure, PEAR has a number of detractors. The editor of a prominent scientific journal once told the lab's founder and senior scientist, Robert Jahn, that he might consider publishing Jahn's recent paper, provided the author would transmit it telepathically.

Dunne copes with the barbs, she says, "without flying off the handle, without getting angry or defensive. We welcome the criticism, and have frequently made changes at the suggestion of other scientists. I think it was Nietzsche who said: 'Love your enemies, because they bring out the best in you.' Unfortunately, many of our critics basically say: 'This is the kind of nonsense I wouldn't believe even if it were real.' They're people

istrators did not hide their concern over Jahn's unusual career turn. They nodded their approval only after an ad hoc committee had been established to ensure that Jahn's research met scientific standards.

Although that committee has since been disbanded, a Princeton colleague, Nobel Prize-winning physicist Philip Anderson, has since attacked PEAR's work, arguing that "if the effect of human consciousness on machines existed, hundreds of people would be beating the bank at Las Vegas." Anderson also believes that it is not up to serious scholars to disprove Jahn's data, smirking that this task should instead be handled by "those who are used to dealing in flim-flam, such as magicians and police officers."

Jahn dismisses the Vegas comment as "a spurious red herring." The effects PEAR has measured are much too small to have any usefulness at the roulette table, he counters. And, for the same reason, you can forget about trying to get the ATM machine to slip you an extra twenty, or about "willing" the traffic lights to turn green as you're speeding along. Your chances would be infinitesimal.

How can you talk about a reality that has no room for human consciousness – the very consciousness that created that world view in the first place?

who have made up their minds that this is all hogwash, without having studied the data."

Robert Jahn agrees. "We were not fully prepared for the degree of recalcitrance that we would encounter in otherwise learned, professional circles," he says, rather testily.

Jahn is a thin, hollow-cheeked man in his 60s who is inseparable from his baseball cap. He holds an undergraduate degree in mechanical engineering, a master of science degree and a PhD in physics, is a professor of Aerospace Sciences at Princeton University, and holds the position of Dean Emeritus of its School of Engineering and Applied Science. He started the PEAR Lab in 1979, putting his reputation, if not his career, on the line. Jahn avoids words like "paranormal," "psychic" and "parapsychology" like the plague. The phenomena he looks at are "engineering anomalies", he insists.

It was clear from the start that the subject was mired in controversy. Princeton admin-

Virtual zoo

Robert Jahn's office is a virtual zoo of stuffed animals, mostly given to him by friends, colleagues, and students. In a corner, Jahn proudly displays his collection of small carousel horses, the fruit of a one-time subscription to the Franklin Mint's Horse of the Month Club. The book he co-authored with Dunne, *Margins of Reality* (Harcourt Brace & Co, 1987), a tome on the role of consciousness in the physical world, is dedicated to the scientist's respective pets, "and to all our other animal friends, who kept watch and understood it all."

He is quick to explain his fascination for animals. "I believe that the capacity for the so-called anomalous interaction between consciousness and the physical environment is best utilised by other-than-human life forms. You see it in the migration capabilities of birds and fish, and in the group consciousness that is evident in swarming insects. It is a capacity of consciousness that

Animal Magnetism: Chick it Out

You can probably have some effect on the behaviour of a sensitive random device if you really try — but chances are you'll never be as good as a cage full of chicks.

In a series of experiments carried out by René Peoc'h in collaboration with the Swiss Fondation Marcel et Monique Odier de Psycho-Physique, a small, self-propelled robot called a Tycho-scope was allowed to wander around aimlessly in a small, enclosed room. A random generator determined the length of the robot's straight-line movement and angle of rotation. Left to itself, the tychoscope moved in entirely random patterns — so spent as much time in the left half of the room as it did in the right half.

But when a cage filled with live chicks was placed on one side of the room, the robot's pattern changed dramatically. On average, it spent considerably more time in the area nearest to the animals. It was as if the birds "willed" the robot to stay close.

The chicks had two reasons for not wanting the robot to stray too far. One group had been "imprinted" (when they hatched, the first thing they saw was the Tychoscope, so they saw it as their mother). Another group had not, but seemed to respond to the lit candle that was placed on top of the Tychoscope in the darkened room. The scientists assumed the chicks didn't like the dark.

Human operators who tried to "will" the robot to stay on one side of the room achieved smaller and more erratic results.

Dean Radin, a researcher at the University of Nevada who is familiar with the Odier experiments, is not surprised by what appears to be the superior psychic aptitude of the baby chicks. "The level of motivation that was manipulated there is much higher than what is typical in a human experiment. For humans, such an experiment is relatively boring. The chicks, on the other hand, reacted as if their lives depended on it."

A second explanation could be that the birds were not hampered by rationalisations that might affect the results of a human volunteer. A person, no matter how open-minded, may subconsciously believe the experiment is strange or silly. Says Radin: "When you have subjects who work on an instinctual level, that presumably leads to higher motivation and more remarkable results." — *Rogier van Bakel*

we have largely bred out of ourselves, as humans, by our preoccupation with the development of the analytical and intellectual capabilities of the mind, leaving the intuitive aspects to wither." PEAR has never done experiments with animal consciousness. However, scattered data from researchers who have, seem to support Jahn's notions (see left).

One floor down from his office, in the engineering school's basement, the PEAR lab is populated by an array of teddy bears and other furry friends, clustered on the velvet orange couch that looks like yesterday's Salvation Army special. On a wall is an official-looking certificate from a group called The Giraffe Project, proclaiming Jahn a giraffe because he "sticks his neck out."

But perhaps more telling are the two signs over the copying machine. One simply identifies the machine as "Baby." That's the name the copier was given by the lab people, who are seeking its full co-operation by using a flattering moniker. "This machine is subject to breakdowns during periods of critical need," warns the other sign. "A special circuit called a critical detector senses the operator's emotional state in terms of how desperate he or she is to use the machine. The detector then creates a malfunction proportional to the desperation of the operator. Threatening the machine with violence only aggravates the situation. Likewise, attempts to use another machine also may cause it to malfunction. They belong to the same union. Keep cool, say nice things to the machine. Nothing else seems to work. Never let anything mechanical know you're in a hurry."

It's pretty standard office humour. Identical signs must be hanging over thousands of computers and copiers throughout the US and the world. But nowhere is it more appropriate than at PEAR, where a team of scientists ponders if "technical" glitches might not, sometimes, be the result of operator anxiety.

"It's funny," critiques Dunne, nodding at the placard. "And on the surface, that's all it is. But taking that kind of attitude toward a machine, humorous though it may be, means treating the machine as if it were alive. To a degree, we all anthropomorphise the sophisticated equipment we work with: our computers, our cars. The way you treat a machine is going to have a great deal to do with the way it behaves. If you slam it, if you bang it, if you treat it like a thing, that reflects an attitude. If you consider the world an extension of yourself, it becomes a better place. Is that engineering? I don't know.

Probably, yes. At the very least, the equipment is simply going to last longer because you take better care of it."

Murphy's Law

Some people, it seems, only have to get near a computer system and it breaks down. And, modern lore would have it, your hard drive is most likely to give up the ghost when you absolutely need that report you forgot to back up last night. Is Dunne implying that Murphy's Law is more than a whimsical piece of pseudo-science; more than a propeller head's version of a generic urban legend? "Most people who work around technology laugh — nervously — when they hear about such phenomena," she says, smiling. "They may dismiss it, but they know exactly what you're talking about."

The sentiment is echoed by Dean Radin, a Nevada researcher who worked for Bell Labs in Columbus, Ohio, and later at Princeton. "In technical circles, Murphy's Law is revered as the Gospel; and on the other hand, the same people laugh about it. Employees get reputations as jinxes or as people who make systems work. At Bell, whenever we were under the gun for an important demonstration to a VIP, the jinxes were not allowed to be present. I thought this was interesting behaviour for people who were otherwise highly analytical and quite bright."

Radin, who has a master's degree in electrical engineering and a doctorate in psychology, got his bosses to OK a study into a possible link between operator anxiety and a machine's performance. "The reason I was able to sell this to management was that if one of the big telephone switching machines goes down for a second, we lose US\$1 million in revenue," he explains.

Tenacious attempts notwithstanding, the link he sought to establish was elusive at best. "I did find, however, that there is a relationship between an operator's intention and the performance of a machine," Radin enthuses. He was able to replicate the random generator experiments that physicist Helmut Schmidt did at Boeing Scientific Research Labs in the '60s. In late 1993, Radin started the privately funded Consciousness Research Laboratory through the University of Nevada. He conducts studies there that he calls both "similar" and "complementary" to PEAR's.

Is there not even a shadow of a doubt in his mind that the mind-over-matter effect really exists? "No. The criticism of this type of research by other scientists is just the

usual knee-jerk reaction to unexpected data.”

That the effects of the human/machine resonance are tiny doesn't mean they can't be important in an exceedingly pragmatic way. For starters, the effects are arguably greater than those of the flaw in Intel's Pentium chip that caused such a brouhaha late last year.

And small effects can have big consequences. In the late '70s, Bob Jahn observed how certain aerospace technology was becoming so sensitive that it had to be protected against a passing cosmic ray. So, he told himself, it wouldn't necessarily be a stretch to imagine some small effect that a human operator – someone who sits in front of a delicate machine, stares at it, and interacts with it for hours on end – might have on that same piece of equipment.

Jahn is not much closer to the answers than he was 15 years ago. “We're far short of understanding the parameters. It's not at all clear how you shield a sensitive device to ignore the cross talk between the information processor that is our mind and the information processor that is the machine. But we know that the cross talk exists, under certain circumstances at least. And I still have the concern that it is the source of some of the gremlin effects that pilots report, and of the events that occur in emergency situations where the stress among the operational crew is bound to be very high.”

PEAR may be laying the groundwork for technology that could eventually lead to more reliable vital computer systems, such as those used in air-traffic control or spacecraft. From the most pragmatic of perspectives, though: how will Dunne's and Jahn's notions about the properties of consciousness change our lives?

“Given what we see in the way of volunteers' signature patterns, a personalised switch is a definite possibility,” Dunne muses. “It would open the garage door when you mind-beam your request at it. If you want to get really science fictiony, you might envision a car that's been attuned to you, and when you're very tense and nervous, a sensor in the car picks this up, and won't allow you to drive over 40 miles an hour.”

Does she believe we'll reach a point where we can interact with our machines by the sheer force of our minds? “It's long-term, but I wouldn't be surprised,” she allows. “We are moving in that direction, with technology being developed for handicapped people, in which they can wire the device to brain waves or eye movements.

“We already have voice-activated computers, and voice locks that recognise the voice patterns of authorised users. That's damn close. If you have something that you might call a psychic signature, how different is that from a voice pattern? Not very.”

Dunne also sees a medical component to PEAR's ventures into human/machine relationships. “Our own bodies are perhaps the most complex and sensitive of information processing machines. That raises the question: Is it possible that some of the processes that go on in the body – for example, random fluctuations in functions like heart-beat, immune response, neuronal connections and the like – might be susceptible, or indeed might be designed to respond to the directives of our consciousness?”

There are many stories about patients who refuse to accept a diagnosis and get better in spite of every expectation. There are also tales of patients who seem to refuse to get better even though there is nothing terribly wrong. If we could get a handle on this thing, it might make a vast difference in how we heal ourselves. I know this is very speculative, but it's an area that is worthy of investigation.”

Cutting off your arm

The technology we use shapes our self-image, theorises Dunne, and therefore becomes an integral part of who we are. “When radio was invented, our brain was compared to a box with transmitters and receivers. Now we're into computers, and the brain has become an information processor, a complex computer. These technologies and metaphors are a reflection of our self-perception, of our own evolution; we develop them as extensions of ourselves. But how can you detach that extension from notions of self and ideas of consciousness? That's like cutting off your arm.”

But is she serious when she recommends pampering and cooing-cooing your equipment? “I'm half-serious,” she insists. “I make fun of it, because yes, sometimes it gets silly.”

Dunne likes to tell a story about Danish physicist Niels Bohr, who supposedly had a horseshoe over his barn door. During a visit, a colleague noticed the horseshoe and inquired, “Come now Niels, you don't believe in that nonsense, do you?” Whereupon Bohr smiled agreeably, and replied: “Of course not, but I am told that it works whether you believe in it or not.” ■ ■ ■

Rogier van Bakel (rogiernl@aol.com) almost missed the deadline for this story because operator anxiety caused his Mac to crash.

Zen and the Art of Flying a Plane

Is it possible to operate a computer without touching it? Yes, says Jonathan Wolpaw – if you don't mind the slow pace or the wires dangling from your head.

Wolpaw, a research physician at the New York State Department of Health's Wadsworth Laboratories, hopes to use the weak electrical impulses generated by the brain to give severely paralysed people a means of communication. Here's how: within the electroencephalographic activity of the brain, there is a wave called the mu rhythm. It originates in the parts that play an important role in motor skills and muscle command. With electrodes, Wolpaw manages to tie the mu rhythm to a cursor on a screen. The cursor goes up if the mu rhythm gets “bigger” and down if the rhythm decreases. Wolpaw asks people to think of different emotions, activities, and sensations, until they find something that influences the rhythm. After a series of training sessions, it becomes “as automatic as lifting your arm.”

Wolpaw's system does not yet give the user the option to select information. Plus the cursor movement itself is limited, as users have considerably more control over up-down movements than left-right ones. He and his team are working on it. “We're inching our way toward that goal.”

A research team at Wright Patterson Air Force Base near Dayton, Ohio, is attempting more or less the same thing, says writer Bennett Daviss in a recent issue of *Air & Space*. The scientists at Wright Patterson are at work on one of the first primitive generations of brain-activated cockpit controls being tested in a flight simulator.

The pilot watches a display that has a rapidly pulsing soft-white light on either side, calling forth a response in the visual cortex at the rear of the pilot's brain. A computer, linked to the brain by two simple electrodes, measures the strength of this brain rhythm and translates it to the controls. By suppressing the brain's response to the light, the pilot steers left; by enhancing it, he or she steers to the right. No one really knows how it is done, not even the pilots. “Once I let it go and started to let it happen, instead of trying to make it happen, I got better control,” marvels one of them. “It was a very Zen experience.” – Justin Warner and Rogier van Bakel

Hunter-Gatherers of the World Unite

By Don Peppers and
Martha Rogers

For hunter-gatherers it's no longer them and us

Inasmuch as America leads Europe in the use of new technologies, it should also lead in experiencing the social changes which technology brings in its wake. Which is why the sudden unpopularity of the Democratic party merits a close, second look. Last November's electoral debacle may have been symptomatic of more than just Bill Clinton's inability to "keep it zipped" and his government's equal incontinence in the face of out-of-control spending. It may also be the first symptom of a fundamental shift in economic allegiance — away from a two-sided political system of owners and workers, and towards an economy based on the hunter-gatherer, the independent contractor, the freelancer, the self-employed consultant.

In Europe, and later in the US, agriculture created two economic classes — those who owned land, and those who worked land owned by others. The Industrial Revolution tweaked these classes some what, creating capitalists who owned factories and office buildings, and labourers who worked in them. Our class-structured economy translated easily into class-structured thinking about all forms of commerce. Not only are there capitalists and labourers, there are buyers and sellers. The working middle class consists of the consumers, who use the money they earn from working for the capitalists, the sellers. Consumers are exploited by producers. Them and us. The haves and have nots. Republicans and Democrats. Labour and Conservative.

Big businesses simplified the choice of political party. America's Democrats clung to power for more than 50 years by articulating how the interests of the vast, middle-class, voting population were different from those of the capitalists and landowners. Britain's Labour party worked a similar trick in the more socialistic and working-class-conscious politics of the United Kingdom. Class differences fuelled the political debate on both sides of the Atlantic.

But silicon is changing everything. Robots have replaced muscle, and menu-driven messaging has replaced live operators at almost every level of society. Even white-collar information workers are being replaced in today's world. Yesterday's capitalist required a battery of clerks to manage the affairs of a giant industrial enterprise. Today, an unexceptional investment banker can do most of the work with a good accountant and a spreadsheet program. No teams of workers labouring over problems. And no batteries needed, except for the laptops.

Many surplus white-collar workers go home to start their own businesses — as consultants, independent contractors, newsletter publishers, graphic designers, freelancers, financial counsellors, or even unexceptional investment bankers. For the most part, they do this not because they want to, but because they have to.

We are being transformed by technology into a hunting-and-gathering economy. We use silicon weapons to search out ideas and images, and we forage for services that can be sold to earn a living. Some of us find our own way down Internet trails, scouting for game and stopping to collect low-hanging fruit. Instead of eating what the landowner allows us to keep, or what the capitalist pays us for our time, we eat whatever we can forage for ourselves.

But we all have to forage, and we will not all eat well. Laid-off, blue-collar workers don't spend much time cruising the I-bahn. They have to forage manually — mowing lawns, bagging groceries, delivering packages, working the flea markets. Fully 25 per cent of American households now report some type of income-generating activity at home.

The rise of the hunter-gatherer is not just revolutionising our economy, but also our social structure. Instead of a society divided into consumers and producers, we will all soon be participating on both sides of the economic equation: a hunter-gatherer is at once consumer and producer, buyer and seller.

For hunter-gatherers, it's no longer them and us. Hunter-gatherers work both sides. They want nothing to stand in the way of food and shelter, so they are completely intolerant of big government and the sort of bureaucratic regulation that accompanies it. It is a cruel irony that in societies in which entitlements guarantee income to a greater and greater number of citizens, the rest should find themselves less secure than ever.

This was the central message of the American election. The Democrats lost because the class differences they used to exploit are no longer relevant. The oppression felt by self-employed hunter-gatherers, no matter where they are on the food chain, is not from exploitation at the hands of rich capitalists but from having to work five months of every year for the government before they can put food on the table. And oppression comes from the knowledge that the more successful they are the more the tax code will punish them.

What we are now witnessing is not just the end of job security. More than that, it is the end of what used to be called the class struggle. Like a statue of Lenin, the icon of class envy has been toppled. It's now in the process of being chopped into small entrepreneurial units. Bricks for the houses of thriving cyber-gatherers. Food for the tables of silicon-armed hunters.

If the Republicans miss this message the first time, if they take their eyes off this central issue for a microsecond to turn the government into a tool of the religious right, then the Democrats may well get a second chance. In Britain, if Tony Blair's new look Labour party does not quickly reflect the aspirations and fears of this new self-sufficient middle class, it will quickly come to look just as outdated as its

present rump of socialist policies, catering for an industrial working class that no longer exists.

No one really knows what our society will look like at the end of this technological journey. Maybe it will be a meritocracy, or maybe an IQ-stratified aristocracy. More likely, it will be simply an uninhibited, unstructured, undisciplined anarchy. Unarchy. One thing is certain, however: in the one-to-one future, government will suddenly become not only less helpful, but less relevant. The message of America's election was

loud enough to be heard across the Atlantic — and the message was: Get the hell out of the way!

Don Peppers and Martha Rogers are co-authors of The One To One Future: Building Relationships One Customer at a Time, (Doubleday, 1993). Peppers is president of Marketing 1:1, a relationship management and marketing technology consultancy. Rogers is executive vice-president at Marketing 1:1 and professor of telecommunications at Bowling Green State University in Ohio.

Money Doesn't Matter

By Roy Davies

Nearly five years ago my life was saved by a blood transfusion after my left leg was shattered by a fall while hiking alone in the Canadian Rockies: two days ago I ordered a copy of a journal article over the Internet and paid by credit card. Both procedures carried risks. I hope that nobody intercepted my unencrypted message. More importantly I trust that the blood donors were healthy and the testing procedures thorough. My trust would be less if the operation had been performed in a country where blood donors were attracted mainly by money — a tempting prospect for penniless junkies — but in countries like Canada and Britain donors are unpaid and motivated mostly by altruism. As with blood, so with the Internet. On the Net, people swap information, and respect other's privacy, mostly because they believe that others will do as they do. The golden rule works; what is good for others often turns out to be good for the individual.

The reverse can also be true. As Adam Smith, the father of economics observed, "it is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest." But not always. Markets can fail. Booms followed by slumps have been caused by speculation in everything from tulips to shares — and information markets seem to be particularly disaster prone.

Fears of how failing markets could mess up the exchange of information have caused arguments about the commercialisation of networks for longer than any of us can remember. Problems in information markets attracted the attention of Charles Babbage who, when not preoccupied with trying to complete his analytical engine or campaigning against street organ-grinders, devoted much of his time to studying economics. He pointed out there is often a cost, in time or money, associated with verification of quality. That is why people are prepared to pay extra for reputable brands. In his day flour was cheap but could easily be adulterated. So, to avoid having to inspect all supplies, the government built its own expensive flour mills to supply the armed forces.

Barter does not solve the problem, contrary to the assumptions of many of the anti-money arguments now floating around the Internet. Barter markets fail too. Remember when

Solomon and the Queen of Sheba tried to outdo the other in generosity in their exchanges of gifts? Surely this was a classic market bubble — except without the cash. In the equally competitive potlatch ceremonies of certain North American native peoples whole communities participated in exchanges spread over several days involving everything from blankets to twentieth-century luxuries such as motor boats. As in the South Sea Bubble, or the Dutch tulip boom, the last buyer (or barterer) before the frenzy stopped often got screwed.

Perhaps one reason for barter's appeal is that, in historical terms, barter is closer to its cultural roots. Until the Canadian government outlawed it in 1927, potlatch festivals included dancing, public speaking and initiation into secret societies. Although potlatch was allowed again in 1951, by then the influence of European culture had become established. By the late 1960s, it had ceased to exist. Gift exchange systems, it seems, have their roots in the culture from which they spring and their survival depends on the health of those roots — perhaps there is a lesson in that for the Internet.

Traditionally markets had social, or cultural, as well as economic functions. The Greek word for market-place, *agora*, originally meant a meeting place. The Athenian *agora* was an arena for gossip, political haranguing, philosophical inquiry and hard bargaining. Everything from apples to water-clocks was for sale, but talk, or information, was always free and when Socrates was the speaker, sometimes priceless. No citizens were excluded from the *agora* except those awaiting trial on serious charges such as murder.

With the Internet, the dream of a global *agora* seems closer than ever: a public space in which commerce and free social interaction flourish side by side. It insists that "free" is not synonymous with "worthless" nor "value" with "price". Whether that value is captured in cash or kind doesn't really matter — so long as everybody keeps talking. So far at least, there is no sign of silence on the Net.

Roy Davies is Science Librarian at the University of Exeter. He can be contacted at Roy.Davies@exeter.ac.uk

Cash or kind,
we need to
keep talking



A MAN IN DUBLIN WARPS HIS COMPUTER
SO HE CAN PRINT A REPORT, READ HIS E-MAIL AND
FAX AN ORDER FOR A PIZZA, ALL AT THE SAME TIME.

BECAUSE SHE GOT WARPED, A STOCKBROKER
IN LONDON SURVIVES A CRASH INTACT.

IN MADRID, A MAN DISCOVERS OS/2 WARP
IS SO EASY, HE DOESN'T HAVE TO
ASK HIS 11 YEAR OLD SON TO HELP INSTALL IT.



A WOMAN IN COPENHAGEN WARPS
COMPUTER AND GIVES HER DOS AND WINDOWS
PROGRAMMES AMAZING VERSATILITY.

AN ASTRONOMY STUDENT IN VIENNA WARPS INTO
THE INTERNET AND DISCOVERS A WHOLE NEW WORLD.

A MAN IN PALERMO WARPS PHOTOS
OF HIS CHILDREN TO GRANDMAMA IN MIAMI.

OS/2 WARP

Introducing OS/2 WARP

The new 32-bit,
multitasking,
multimedia,
Internet-accessed,
crash-protected,
Windows-compatible,
easy-to-install,
totally amazing
way to run your
computer.

Available from
as little as £70*

OS/2 WARP
from IBM.

It's here.

See your local
dealer today.

For more information
please call

0800 300 003

or write to

Oscar Walters,
IBM

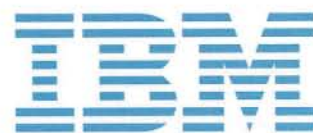
Freepost PT731,

P.O. Box 1,

Rockware Avenue,
Greenford,

Middlesex UB6 0BR.

Please quote POSWIR03



available from your local dealer. OS/2 Warp, Version 3 - CD-ROM £70 + VAT. 3.5" Diskette £85 + VAT.
oted are recommended selling prices (r.s.p.) and are exclusive of VAT and may vary between suppliers.
2 Warp consists of BonusPak (12 applications) and OS/2 Version 3. IBM is the registered trademark of
ss Machines Corporation. OS/2 Warp is the trademark of International Business Machines Corporation.
All other trademarks are acknowledged.

If any father has been forsaken by his children, it is Thomas Paine. Statues of the man should greet incoming journalism students; his words should be chiselled above newsroom doors and taped to laptops, guiding the communications media through their many travails, controversies and challenges. Not so. A fuzzy historical figure of the 1700s, Paine is remembered mostly for one or two sparkling patriotic quotes – “These are the times that try men’s souls” – but little else.

Yet Thomas Paine, Professional Revolutionary, was one of the first to use media as a powerful weapon against an entrenched array of monarchies, feudal lords, dictators, and repressive social structures. He invented political journalism, creating almost by himself a mass reading public aware for the first time of its right to read controversial opinions and to participate in politics.

Between his birth in 1737 and his death in 1809, enormous political upheavals turned the Western World upside down – and Paine was in the middle of the biggest. His writings put his own life at risk in every country he ever lived – in America for rebellion, in England for sedition, and in France for his insistence on a merciful and democratic revolution. At the end of his life, he was shunned by the country he helped create, reviled as an infidel, forced to beg friends for money,

Because Paine is for the taking and he is worth having. If the old media – newspapers, magazines, radio, and television – have abandoned their father, the new media – computers, cable and the Internet – can and should adopt him. If the press has lost contact with its spiritual and ideological roots, the new media culture can claim them as its own.

For Paine does have a descendent, a place where his values prosper and are validated millions of times a day: the Internet. There, his ideas about communications, media ethics, the universal connections between people, the free flow of honest opinion are all relevant again, visible every time one modem shakes hands with another.

The Net offers what Paine and his revolutionary colleagues hoped for in their own new media – a vast, diverse, passionate, global means of transmitting ideas and opening minds. That was part of the political transformation he envisioned when he wrote: “We have it in our power to begin the world over again.” Through media, he believed, “we see with other eyes; we hear with other ears; and think with other thoughts, than those we formerly used.”

Tom Paine’s ideas, the example he set of free expression, the sacrifices he made to preserve the integrity of his work, are being resuscitated by means that hadn’t existed or been imagined in

His Rights of Man

was a clarion call for universal democracy.

His Common Sense

inspired Americans to independence.

The Age of

He died 186 years ago.

So why should

Thomas Paine be adopted as the patron saint of

denied the right to vote, refused burial in a Quaker cemetery. His grave was desecrated. His remains were stolen.

A popular old nursery rhyme about Paine could as easily be sung today:

*Poor Tom Paine! there he lies:
Nobody laughs and nobody cries.
Where he has gone or how he fares,
Nobody knows and nobody cares.*

Certainly that’s true of today’s media. The modern-day press has become thoroughly disconnected from this brilliant, lonely, socially-awkward ancestor who pioneered the concept of the uncensored flow of ideas and developed a new kind of communications – journalism – in the service of the then-radical proposition that people should control their own lives.

In the US, his memory has been tended in the main by a few determined academics and historians, and a stubborn little historical society in New Rochelle, NY, where he spent most of his final, impoverished days. In Britain, the Thomas Paine Society (president, Michael Foot MP) is widely regarded as no more than a harmless hobby for old lefties.

But if journalism and the rest of the country has forgotten Paine, why should we remember another of history’s lost souls?

his day – via the blinking cursors, clacking keyboards, hissing modems, bits and databytes of another revolution, the digital one. If Paine’s vision was aborted by the new technologies of the last century, newer technology has brought his vision full circle. If his values no longer have much relevance for conventional journalism, they fit the Net like a glove.

Paine’s life and the birth of American media prove that information media were never meant to be just another industry. The press had a familiar and profoundly inspiring moral mission when it was conceived: information wants to be free. Media existed to spread ideas, to allow fearless argument, to challenge and question authority, to set a common social agenda.

Asked about the reasons for new media, Paine would have answered in a flash: to advance human rights, spread democracy, ease suffering, pester government. Modern journalists would have a much rougher time with the question. There is no longer much widespread consensus, among practitioners or consumers, about journalism’s practices and goals.

Jon Katz can be e-mailed at JDKatz@aol.com

COMMON SENSE
ADDRESSED TO THE
INHABITANTS
OF
AMERICA

On the following interesting
SUBJECTS

I. Of the Origin and Design of Government in general,
with concise Remarks on the English Constitution,

Of Monarchy, and Hereditary Succession.

IV. Of the Liberty and Rights of the People
in Relation to the Legislature.

Written by an ENGLISHMAN

By Thomas Paine

Man knows no Master save himself
Or those whom choice and justice bind

PHILADELPHIA,
And Sold by R. BELL, in Third

Illustration by Mark Sommers

Paine

the age of information?

Jon Katz on an old hero for a new era.....



Of course, the ferociously spirited press of the late 1700s that Paine helped invent was a very different institution, dominated by individuals expressing their opinions. The idea that ordinary citizens with no special resources, expertise or political power – like Paine himself – could sound off, reach wide audiences, even touch off revolutions, was brand new to the world.

But Paine could not have foreseen how fragile and easily overwhelmed these values and forms of expression would be when they collided with free-market economics. The rotary press and other printing technologies that made it possible for him to broadcast his pamphlets also led newspaper publishers to make papers tamer and more moderate so that their numerous new customers wouldn't be offended. Paine once warned a Philadelphia newspaper editor about the distinction between editorial power and the freedom of the press. It was a caution neither the editor nor his increasingly wealthy and powerful successors took to heart: "If the freedom of the press is to be determined by the judgment of the printer of a newspaper in preference to that of the people, who when they read will judge for themselves, the freedom is on a very sandy foundation."

So it is. But if the old media has blithely ignored Paine, it is incumbent upon the new to pay heed. The digital age is young, ascending, diverse, and already nearly as arrogant and, in parts, as greedy as the mass media it is supplanting. It faces enormous danger from government, from corporations which also control much of the traditional media, from commercialisation, and from its own chaotic growth.

Paine is a guide, the conscience that can help new media remember the past in order not to repeat it. He can cut across time.

Paine often introduced his most controversial ideas formally and courteously: "The following notion is put under your protection. You will do us the justice to remember that he who denies the right of every man or woman to his own opinion makes a slave of him or herself, because they preclude the right of changing their own minds."

This notion is put under your protection, too: Thomas Paine is the illegitimate father of the Internet. Thomas Paine should be our hero.

The sad part of Paine's story is that it's necessary to pause here and tell it to those who may have never heard any of it. He lived a life that would make the cheesiest Hollywood screenwriter blush. Born in England in 1737, he ran away from home to sail as a privateer, then worked as a stay-maker and matched wits with smugglers as a customs collector. He quit to lobby Parliament for better pay for himself and fellow customs collectors. He lost his job but met Benjamin Franklin, who urged him to move to America, and with whom he maintained a lifelong correspondence.

One of the regulars at Independence Hall, Paine was a philosophical soulmate of Thomas Jefferson. He fought and froze with his buddy George Washington at Valley Forge. George III badly wanted to hang Paine because he helped touch off the American Revolution with his writings, then tried him for sedition after Paine had the gall to return to England and lobby for an end to the monarchy.

He fled to France, where the bloodthirstier leaders of the Revolution ordered him killed because he urged leniency for the members of the overthrown regime and because they feared he would alert Americans to their increasingly undemocratic uprising. Clergymen all over the world cursed him for his heretic religious views. Businessmen despised him even more for his radical views about labour.

In between was high drama, great daring, narrow scrapes – wandering Revolutionary War battlefields dodging British bullets, fleeing England 20 minutes ahead of warrants ordering his arrest, coming within hours of being guillotined in Paris. Paine seemed to live most happily in boiling hot water.

The Big Concept man of his time, the deep ideas he advanced still resonate: An end to monarchies and dictatorships. American independence from England, of course. International federations to promote development and maintain peace. Rights and protections for labourers. An end to slavery. Equal rights for women. Re-distribution of land. Opposition to organised religion as a cruel illusion or a corrupt hoax. Public education, public employment, assistance for the poor, pensions for the elderly. And above all, a fearless press that told the truth, gave voice to individual citizens, tolerated opposing points of view,

Paine imagined a global means of communication, one in

Paine in the '90s

Thomas Paine attacked the self-elected elites who believed they had a rightful monopoly on power, morals and learning; he opposed hierarchies based on precedent and tradition rather than reason; he believed people should be considered according to how well they worked, not how old they were; and he argued that each generation should be able to change what they wanted according to their needs.

Relevant though these messages are for 20th-century Britain, they have been ignored while, ironically, those of his political antithesis, Edmund Burke, live on. Burke denounced Republicanism

and argued for the wisdom of the past; that a nation was a set of inherited traditions and customs which could not be changed. Allow the people or, as Burke called them, "the swinish multitude", to run their own lives and disaster would surely follow. The left wing that coalesced at the turn of this century neglected Paine in favour of a one-size-fits-all philosophy of socialism — state control as a universal cure for injustice. Thereafter, all political and philosophical debate in Britain has been conducted as a pitched battle between socialists and conservatives — institution versus institution, class versus

class, with the individual forgotten in the crossfire.

But the world is on the cusp of change. If the last decade was portrayed as a showdown between left and right, a choice between 1945 and 1895, this one is more complex. While Britons accepted deregulation, share ownership and a customer-based economy, they rejected any attempt to restrict their personal lives with traditional morals. Simultaneously, the globalisation of markets has led companies to focus on performance: it's no longer enough to be white, male, bald, and middle-class to manage a business. Meritocracy, not

seniority, has become the key to success. Precedent and tradition are dead.

Or are they? The fact is that a Tom Paine-style meritocracy, which could now emerge, is a mortal threat to the elites of both left and right who make up our great British institutions. In the '90s, the availability of new media and explosion of information it heralds will undermine the authority of the so-called opinion-formers. And our political parties have no interest in letting us run our own lives. Increasingly, the members of this institutionalised oligarchy are realising that the left-right divisions between

transcended provincialism and was accessible to the poor as well as the rich.

He was as astonishingly productive as he must have been obnoxious, mouthing off about everything from yellow fever to iron-bridge construction. Although he wrote countless articles and pamphlets, his core works are four powerful, sometimes beautifully written, flaming-with-indignation essays.

"Common Sense" was the argument for independence which helped spark the American Revolution. "Rights of Man", an essay written in support of the French Revolution, attacked hereditary monarchies and called for universal democracy and human rights. "The Age Of Reason" challenged the logic behind organised religion's grip on much of the Western World, and "Agrarian Justice" called for radical reforms in the world economy, especially in land ownership. The first three constituted the three best-selling works of the 18th Century.

In 1774 Paine was 37 and arrived in Philadelphia with little more than a letter of reference from Franklin. He landed a job as executive editor of a new publication called *Pennsylvania Magazine*. In January of 1776, "Common Sense" went on sale for two shillings.

"Common Sense" became America's first bestseller, with more than 120,000 copies sold in its first three months, and possibly as many as half a million its first year — this in a country whose population was three million. Newspapers, then crammed with controversial viewpoints, scrambled to reprint it.

It had, wrote a contemporary historian, "produced most astonishing effects; and been received with vast applause, read by almost every American; and recommended as a work replete with truth." It was nicely written, too, one of the first and most dramatic of the anthems and calls-to-arms that run through Paine's writing.

The cause of America, wrote Paine, was the cause of all mankind. "O! ye that love mankind! Ye that dare oppose not only the tyranny but the tyrant, stand forth! Every spot of the old world is overrun with oppression. Freedom hath been hunted round the globe. Asia and Africa have long expelled her. Europe regards her like a stranger, and England hath given her warning to depart. O! receive the fugitive, and prepare in time an asylum for mankind."

Paine's democratic republicanism had deep British roots. He might have been influenced by some of the world's earliest, least-known and best political journalists such as the late 17th-century pamphleteers Sir William Molesworth and Walter Moyle. Such high-brow English republicans had no notions of democracy or universal suffrage — not to mention representative government, which they considered anarchic and dangerous. Those were Paine's additions. He broadened his definitions of "the people" to include labourers, slaves, women, fisherman, and artisans. Paine's writings about these new notions of democracy in *Common Sense*, wrote Jefferson, "rendered useless almost everything written before on the structures of government."

The publication of "Rights Of Man" made Paine the most controversial figure in Britain. He was followed by government spies, targeted for propaganda attacks and gossip campaigns. He experienced more fear than ever before, and for the first time, was threatened with loss of freedom of speech. No book had ever sold like it in Britain. By May of 1792, 50,000 copies had been sold. "Rights Of Man" broke every existing publishing record. There was only one possible outcome to Paine's challenge to the monarchy and the government of William Pitt, and his defence of the revolutionary stirrings in France.

On May 21, the government issued a summons ordering Paine to appear in court on charges of seditious libel, which carried a possible — and probable — death penalty. At the end of the first week of September, his trial looming, Paine's friend the poet William Blake warned him not to go to his house or he would be killed. On September 13, he fled to Dover, boarding a ship to Calais and France while an angry dockside crowd jeered.

Three months later, The Honourable Spencer Perceval rose in Guildhall to denounce Paine as a traitor and a drunk. Defenders of Paine's republican notions failed to impress the jury. Mr Campbell, the jury foreman explained that he had been instructed by his brother jurors to save time by avoiding deliberations and delivering an immediate verdict — guilty. Thousands of Paine supporters had gathered outside, shouting chants of "Paine for ever!" and "Paine and the liberty of the press!"

which the boundaries between sender and receiver were cleared away

they are merely semantics: left and right are beginning to sing the same song. With increasing alarm, they see power shifting from their institutions — like the BBC, Parliament, and staid, monolithic business organisations — to the individual. And they want to set this process into reverse.

The communitarian movement which aims to clamp down on individual rights and enforce "social duties" is endorsed by Labour's Gordon Brown, many Liberal Democrats, and Conservatives like David Willets. A recent bill to control the sale of videos in the high street proposed by the so-called Liberal, David Alton,

was seconded by Tony Blair and had the full support of many Conservative backbenchers. And left-wing economist Will Hutton now mourns the end of the old enemy: big business bureaucracies. "They may have been cumbersome, but they were the means of imposing impartiality and order upon the world." Moreover, rather than following their policy of deregulation, the Conservatives have shored up the BBC's licence monopoly for another five years. In return, Director General John Birt tells his journalists to pose less searching questions to politicians during interviews.

Paine described this farce 200

years ago: "In this species of political fortification all the parts have such a common dependence that it is never expected that they will attack each other."

Left and right came together once before in the 1930s. "The Popular Front" was formed for ethical reasons to fight fascism. This time around, the union has been forged to fight its own extinction, and it can only be described as the Unpopular Front. Sheffield University professor David Marquand shows how far we have come when he suggests that new thinking on the left should "...owe as much to Edmund Burke as to William Morris."

Forget left and right.

The real divide lies between The Unpopular Front — the authentic voice of Edmund Burke — or progress, the authentic voice of Tom Paine: empowerment, individual choice and the development of meritocracy.

Paine described this as a battle between the frozen winter of authoritarian rule and the freedom of summer. Whereabouts are we in all this? Well, as Paine said: "What pace the political summer may keep with the natural no human foresight can determine. It is however not difficult to perceive that the spring has begun." — Simon Jameson

Herewith, to be put under your protection, some of the more striking connections between the Net and its spiritual father. Paine would have loved the Internet's inclusiveness. For Paine, moving ideas from one place to another at all was a spiritual notion, a miraculous vision. He imagined a global means of communication, one in which the boundaries between the sender and receiver were cleared away.

The freedom to send and receive these ideas was, to Paine, one of the fundamental rights of mankind. And it was the essence of media. He shared this notion most intensely with his soulmate Thomas Jefferson. The two corresponded constantly about how ideas were conceived and moved.

Paine called for a "universal society", one whose citizens transcended their narrow interests and considered humankind as one entity. "My country is the world," he wrote. The Internet has, in fact, redefined citizenship as well as communications. It is the first world-wide medium in which people can communicate so directly, so quickly, so personally and so reliably. Where computers are plentiful, digital communications are nearly uncensorable.

This reality gives our moral and media guardians fits; they still tend to portray the computer culture as an out-of-control menace harbouring perverts, hackers, pornographers and thieves. But Paine would have known better. The political, economic and social implications of an interconnected global medium are enormous, making plausible Paine's belief in the "universal citizen".

He would recognise the Net's style and language too. Paine believed

29 Jan 1737
Thomas Paine
born, Thetford,
England

10 Jan 1776
Common Sense
published

4 July 1776
American
Independence
declared

Nov 1782
War Of
Independence
ends

22 Feb 1791
Rights Of Man
published

Feb 1792
Rights Of Man,
Part Two
published

14 Sept 1792
Paine moves
to Paris

18 Dec 1792
Paine tried in
absentia in
England for
seditious libel

that media should speak in short, spare, unadorned language that everyone could understand. His writing brims with humour, sarcasm, exaggeration and paradox. He was the first modern political writer, writes John Keane in *Tom Paine: A Political Life*, the newest and perhaps the best of the Paine biographies "to experiment with the art of writing democratically and for democratic ends. He hammered out a colloquial style that eschewed meaningless sentences, purple passages and general humbug because he considered the highest duty of political writers was to irritate their country's government."

Reading Paine is eerie after spending time online in online political conferences on the WELL, say, or poring through the most provocative e-mail. From "smiley" emoticons to reasoned arguments to raging flames to the staccato shorthand (LOL, IMHO) of countless e-mailers, digital communications are spare, blunt, economic and efficient. Paine's style is the style of the Internet; his voice and language could slip comfortably into its debates and discussions.

If Paine would feel at home there, he would also fight to protect this nascent medium. Learning what had happened to the media he founded as corporations moved in, he would spot commercialisation as Danger Number One. He believed in a press that was not monopolistic but filled, as it was in his time, with individual voices, one that was cheap, accessible, fiercely outspoken. He believed that media like the Net – many citizens talking to many other citizens – were essential to free government.

He was right: Journalism's exclusion of outside voices and fear of publishing any but moderate opinions has made it difficult for the country to come to grips with some of its most sensitive issues – race, gender, violence. Media overwhelmed and monopolised by large corporations, inaccessible to individual people and motivated primarily

by profit was the literal antithesis of Paine's life, his work and his vision for the press.

We could use his clear direction at a time when mainstream media are losing their ethical grounding. Paine would never appear on talk shows or garner fat speaking fees. At one point during the Revolutionary War – when he was completely broke, as usual – he was offered a thousand pounds a year by the French government to write and publish articles in support of the Franco-American alliance against Britain. Paine said no. He told friends that the principle at stake – the freedom of political writers to express opinions free of any party's or government's taint – was sacred, even if it meant being a pauper. And for him, it did.

During his life his value system remained intact. Shortly before he died, bed-ridden, impoverished and mostly alone, he fired off a note to an editor in New York City who had messed with the outspoken prose in one of Paine's final essays.

"I sir," Paine wrote, "never permit anyone to alter anything that I write; you have spoiled the whole sense that it was meant to convey on the subject."

His death bed scene was perhaps the greatest example of Paine's refusal to compromise.

Lapsing into unconsciousness, in agony from gangrenous bedsores, Paine woke occasionally to cry, "Oh, Lord help me! Oh, Lord help me!" Convinced that Paine's time on earth was nearly up, a physician and pastor named Manley took advantage of one of Paine's last lucid moments to slowly save his soul by saying, "Allow me to ask again, Do you believe, or let me qualify the question, Do you wish to believe that

Jesus Christ is the son of God?"

Incapable of acquiescence, even when it might have provided him some comfort, Paine uttered his quiet last words: "I have no wish to believe on that subject."

Small wonder one colonial wrote of him: "The name is enough. Every person has ideas of him. Some respect his genius and dread the man. Some reverence his political, while they hate his religious, opinions. Some love the man, but not his private manners. Indeed he has done nothing which has not extremes in it. He never appears but we love and hate him. He is as great a paradox as ever appeared in human nature."

It's easy to imagine Paine as a citizen of the new culture, issuing fervent harangues from <http://www.commonsense.com>. He would be a cyber-hellraiser, a Net-fiend.

He might belong to contentious conferencing systems like the WELL or New York's Echo, but he would especially love cruising the more populist big boards – Prodigy, CompuServe, AOL. He would check into Time On-Line's message boards and tear into Republicans and Democrats daily. He would e-mail the *New England Journal of Medicine* his tracts on the spread of disease, and pepper *Scientific American* home page with his ideas about bridges.

He would bombard Congress and the White House Internet site with proposals, reforms and legislative initiatives, tackling the most explosive subjects head-on, enraging – at one time or another – everybody.

The Net would help enormously in his various campaigns, allowing him to call up research papers, download his latest tract, fire off hundreds of angry posts and receive hundreds of replies.

They would hear from him soon enough in China and Iran, Croatia

and Rwanda. He would not be happy to find his old nemeses from the House of Hanover still around in Britain, but would be relieved to see George's heirs reduced to tabloid fodder and France a republic after all. He would emit Nuclear Flames from time to time, their recipients emerging singed and sooty. He would not use smileys. He would be flamed incessantly in turn.

He and the massing corporate entities drooling over the Net would be instantly and ferociously at war as he recognised Time-Warner, TCI, the Baby Bells and Viacom as different incarnations of the same elements that scarfed up the press and homogenised it. The gap between Paine's tradition and modern journalism seems poignant and stark. Journalism no longer seems to function as a community. Since it no longer shares a value system – a sense of outsider-ness, a commitment to truth-telling, an inspiring ethical structure – journalists seem increasingly disconnected from one another as well as from the public.

Paine would have lots to say about the so-called Information Highway and the government's alleged role in shaping it. One of his pamphlets – this may be the only thing he'd have in common with Newt Gingrich – would surely propose means of getting more computers and modems into the hands of people who can't afford them.

He would be spared the excruciating loneliness he faced in later life on that modest farm, where neighbours shunned him and visitors rarely came and where he pored over newspapers for any news of his former friends' lives. No longer an outcast, thanks to the Net, he would find at least as many kindred spirits as adversaries; his cyber-mailbox would be eternally full.

Instead of dying alone and in agony, Paine would spend his last days

21 Jan 1793
Louis XVI
executed

27 Dec 1793
Paine arrested
in Paris

1794
The Age Of
Reason published

4 Nov 1794
Paine released

1797 Agrarian
Justice published

Nov 1802
Paine returns
to US

8 June 1809
Thomas Paine dies

sending poignant e-mail all over the world from his deathbed via his Powerbook, arranging for his digital wake. He'd call for more humane treatment for the dying. He'd expound online about the shortcomings of medicine and the mystical experience of ageing while digging into his inexhaustible supply of prescriptions for the incalculable injustices that still afflict the world.

“I know not whether any Man in the World has had more influence on its inhabitants or affairs for the last thirty years than Tom Paine,” John Adams wrote to a friend after Paine's death in 1809, “for such a mongrel between Pigg and Puppy, begotten by a wild Boar on a BitchWolf, never before in any Age of the World was suffered by the Poltroonery of mankind, to run through such a career of mischief. Call it then the Age of Paine.”

It's odd that so spectacular a force of media and political nature should be so vaguely remembered. Unfortunately for Paine, the historian Crane Brinton reminds us, revolutionaries need to die young or turn conservative in order not to lose favour with society. Paine did neither and fell from grace. Many of his reform programmes will always remain unacceptable to resurgent political conservatives; his religious views will always offend Christians. Though his memory is invoked from time to time, “his resurrection will never be complete.”

At the moment, though, he is showing signs of minor respectability. This year, officials in Washington were considering funding a monument to him somewhere. And Sir Richard Attenborough, the famed actor and director, has been struggling for several years to get studio backing for a film about Paine. A Paine bio – which at the very least would feature two bloody revolutions, stand-offs with Napoleon, tangles with the House of Hanover and cameo roles for Washington,

Jefferson, Robespierre and King George – would make a socko TV miniseries, too.

Imagine the scene of his near execution. Paine went to France after the Revolutionary War as a hero and supporter of democratisation there. But the French Revolution was far bloodier and more violent than America's. Paine tried to save King Louis's life and pleaded with the country's new rulers to be merciful and democratic. Eventually, he was imprisoned and sentenced to death. In June, 1794, six months into his harrowing imprisonment, Paine fell into feverish semiconsciousness. His cellmates barely kept him alive, mopping his brow, feeding him soup, changing his clothes.

The prison governors were to take him to the guillotine the next morning. At six am, a turnkey carrying Paine's death warrant walked quietly down the prison corridors, chalking the cell doors of the condemned, marking the number 4 on the inside of Paine's door. Usually the turnkey marked the outside of the door, but Paine was seriously ill and his cellmates had been granted permission to leave the door open so that a breeze could cool Paine's profusely sweating body.

That evening, the weather cooled and Paine's cellmates asked a different turnkey for permission to close the door. Knowing that the number on the door was now inward, the occupants of the cell waited, Paine murmuring on his cot. Near midnight, the death squad slowly made its way down the corridor, keys jangling, pistols drawn. One of his friends cupped his hand over Paine's mouth. The squad paused, then moved on to the next cell.

A few days later, the Revolutionary government was overthrown. Despite his close call, Paine stayed in France until 1802 when he man-

aged, inevitably, to alienate Napoleon. At the invitation of Jefferson, he returned to a hostile welcome in the United States, where he spent the last seven unhappy years of his life.

Perhaps, if a movie is made and Paine becomes a focus of attention once more, somebody could locate his bones. That they are missing may be the most fitting postscript to his life. In his *Weekly Political Register*, William Cobbett, under the pseudonym of Peter Porcupine, smarted at the way Paine had been neglected in his final years. “Paine lies in a little hole under the grass and weeds of an obscure farm in America. There, however, he shall not lie, unnoticed, much longer. He belongs to England.”

Just before dawn one autumn night in 1818, Cobbett, his son, and a friend went to Paine's New Rochelle farm – the hole under the grass is still there, marked by a plaque from the Thomas Paine Historical Society – and dug up his grave, determined that Paine should have a proper burial in his native country.

The story grows fuzzy from there. By most accounts, Cobbett fled with Paine's bones, but never publicly buried the remains. Some historians think he lost them overboard on the return voyage. But certain British newspapers report their being displayed in November, 1819, in Liverpool.

After Cobbett's death in 1835, his son auctioned off all his worldly goods, but Paine's bones weren't among them. Parts of Paine, truly by now the “universal citizen” he wanted to be, have been reported turning up intermittently ever since. In the 1930s, a woman in Brighton claimed to own what clearly would be the best part of Paine to have – his jawbone. As historian Moncure Daniel Conway wrote a hundred years ago: “As to his bones, no man knows the place of their rest to this day. His principles rest not.” ■ ■ ■



Pattie Maes believes software agents are ready for prime time.

Agent of Change

By Scott Berkun

Wired: I've been reading about attempts to make agent-based systems for more than 10 years. Why is it so difficult?

Maes: I don't think it's hard. I think people have taken the wrong approach. In the early days of AI, people were very self-confident; they were convinced AI would be the solution to many problems. They put forward a very ambitious goal that I believe we may never achieve: to build agents that are very intelligent, have common-sense knowledge, and understand why people do things. AI researchers have been trying to do this for 15 or 20 years, and haven't seen significant results. The idea of agents really isn't new. There have been people working on agents all along – they just haven't produced many results yet.

So, how are the approaches you're using different from those of the past?

We have a less ambitious target. We don't try to build agents that can do everything or are omniscient. We try to build agents that help with the more repetitive, predictable tasks and behaviours.

Would there be a specific agent for a specific task?

Right – that's what we've been building so far. The system learns about its user's habits, interests, and behaviours with respect to that task. It can detect patterns and then offer to automate them on behalf of the user.

Recently, we have augmented that task with collaboration – agents can share knowledge they have learned about their respective users. This is helpful for people who work in groups and share habits or interests. So those are the techniques we've been exploring: observing user behaviour, detecting regularities, watching correlations among users, and exploiting them.

How does the user maintain control with these systems?

We think it's important to keep the user in control, or at least always give them the impression they are in control. In all of the systems we build, the user decides whether to give the agent autonomous control over each activity. So it's the users who decide whether the agent is allowed to act on their behalf, and how confident the agent has to be before it is allowed to do so. Users can also instruct agents, giving them rules for special situations. You can tell the system whether the rule is soft or hard – soft being accepted as a default that can be overwritten by what the agent learns, hard meaning it cannot be overwritten by the agent.

How do you see the Internet affecting your work?

The Internet is part of the motivation for agents – it's going to be impossible, if it isn't already, for people to deal with the complexity of the online world. I'm convinced that the only solution is to have agents that help us manage the complexity of information. I don't think designing better interfaces is going to do it. There will be so many different things going on, so much new information and software becoming available, we will need agents that are our alter egos, know what we are interested in, and monitor databases and parts of networks.

It won't be how great your software is, it will be how great your agent is?

I'm convinced there will be great pieces of software, but you'll need an agent to help you find them.

I see a few problems with the idea of agents: One is that they are never more than 90 per cent accurate. Another is that they can take a significant amount of time to learn my behaviour.

I agree that we never will get 100 per cent accuracy – agents will always make mistakes. But whenever you delegate to someone – be it human or program – you inevitably give up some accuracy. If you give a task to someone else, it will never be done quite the way you want. Delegation is the only way to cope with how much work you have. If you had an infinite amount of time, you wouldn't need to delegate. But the problem is no one has that kind of time. For example, I've never had the time to read newsgroups or to find the ones I wanted, but with the newsreader agent we built, I have news articles suggested to me, and it gives me the time to read them.

You have to be careful which tasks you delegate – if the cost of a mistake is high, don't let someone else do it. But many tasks are low-risk. If my newsreader agent gives me an article I don't want, or forgets to give me one I *do* want, it has already done more than I could do without it. I think you just have to be aware of the cost of

a mistake for a particular task and adjust the agent's autonomy accordingly. The learning time is not necessarily a negative feature. Users will have less difficulty accepting agents if they gradually gain their trust. Trust has to be earned and that always takes time.

We increased the learning rate once we explored having agents collaborate. We found agents were learning the same things independently. For instance, messages from mailing lists or newsgroups have a lower priority than personal mail. With collaboration, agents can start with shared libraries of experience.

What about someone else using my machine — or my agent?

Security is a general computer issue – it's not unique to agents. Security will develop as computers advance. I think people will, for other reasons want their agents – and particularly the knowledge the agent has about them – secured.

How long will it be before something like the mail system you've developed becomes a product?

I don't think it will be long at all – I suspect in the next two years.

How will agents change the way people use and think about computers?

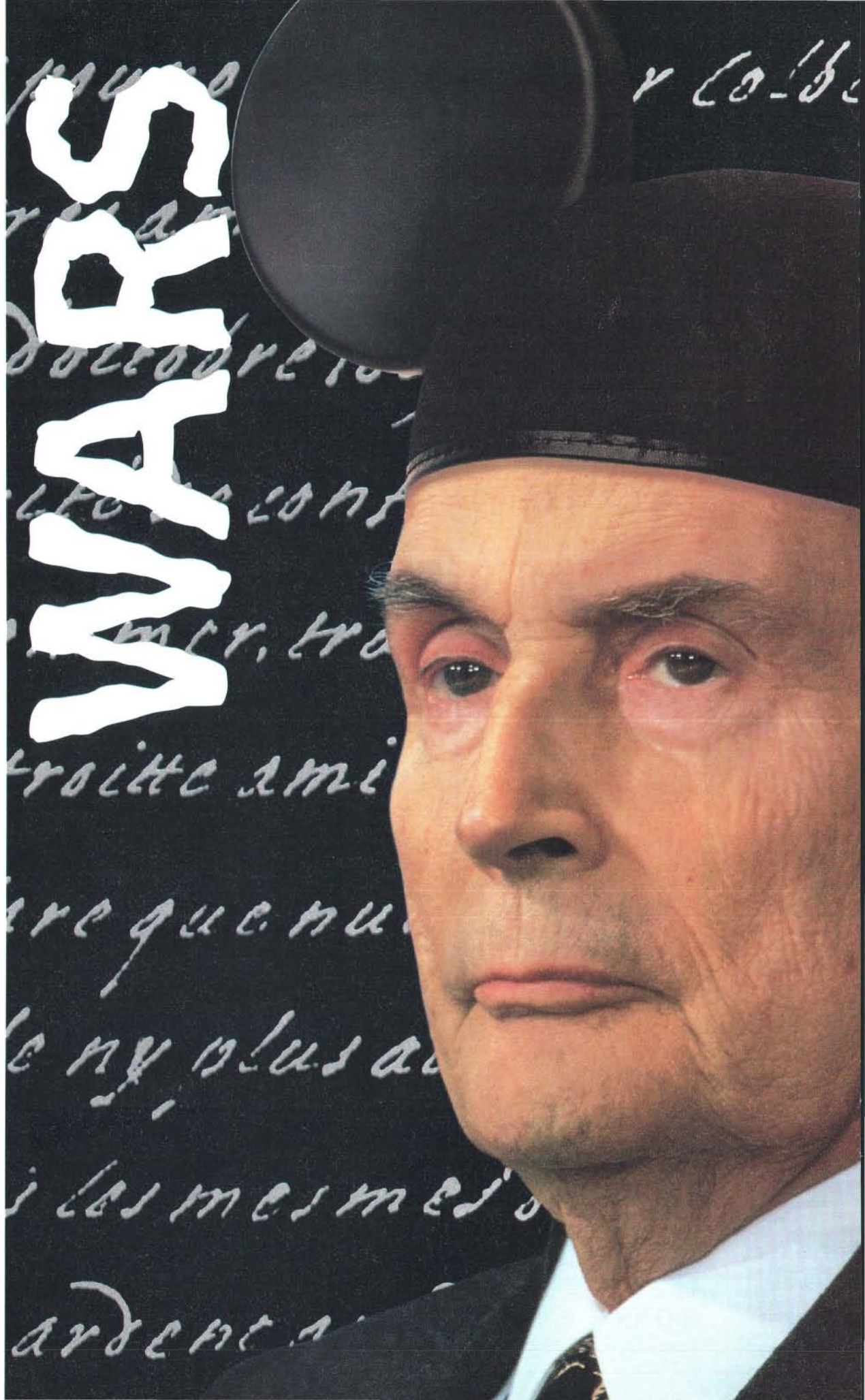
I hope agents will make people feel more comfortable dealing with the overload of information, more in control. Confident agents are working on their behalf, are reliable, and never become tired; they are always looking to help the user. One problem I see is that people will question who is responsible for the actions of an agent. Especially in situations like when an agent takes up too much time on a machine or purchases something you don't want on your behalf. Agents will raise a lot of interesting issues, but I'm convinced we won't be able to live without them. ■ ■ ■

Pattie Maes (pattie@media.mit.edu) received a PhD in artificial intelligence from the University of Brussels, then moved to MIT to work on autonomous robots with Rodney Brooks, a pioneer in making machines think independently. But Maes grew frustrated with the frailty of robotic hardware, and she switched her expertise in AI towards software. At the Media Lab at MIT, she is creating software agents which she hopes will soon become reality. During the last few years, she has led research on several working-prototype systems, including a mail reader, a meeting scheduler, a Usenet news-filter and a program to recommend good rock and roll records. Scott Berkun spoke with the MIT professor about her intelligent-agent applications and why agents have been difficult to build using traditional AI techniques.

Scott Berkun (scottber@microsoft.com) is a UI/Usability specialist at Microsoft.

Culture

swans





François Mitterrand

has declared war on

Mickey, Madonna and

all-American culture.

Bad news François:

Mickey's winning.

John Andrews reports

from the front line

François Mitterrand, 78 years old and stricken with cancer, can still play to the gallery. "Europe," declared France's president on a swan-song visit to the European Parliament in Strasbourg, "must be more than economic balance sheets and tons of freight. I would say, but I don't want to exaggerate, that it needs a soul... Europeans must love Europe."

But a stroll through Paris, city of romance, suggests that all is not well with this love affair. The films in Montparnasse and on the Champs Elysées are American – *Pulp Fiction*, *Forrest Gump*, *Mrs Doubtfire* – and the hamburgers are McDonalds. Turn on the television and Magnum springs to action, the Selleck moustache not quite in time with the French-dubbed soundtrack. Switch on Radio Nostalgie and the songs are by Elvis and the Beach Boys. "Cool" is the cool word among French youth, and the coolest also say "fuck", a habit picked up from watching *Pulp Fiction*. Even newscasters are succumbing to the lure of the American – describing the last big Los Angeles earthquake as "pas le Big One".

France's patriarchs are outraged. Europe's love affair with Europe is threatened by this cultural flirtation with Americans, and they are determined to put a stop to it – single-handed if necessary, but with the full weight of the European Union behind them if possible. France's preferred weapon against the cultural invaders of Paramount, CNN and MTV is quotas. Anything non-European must be strictly rationed. The majority of what appears on television and radio must be European – and preferably French. As for cinema, the French already impose a levy on the ticket price, and plough the money back into French movie productions.

Slowly, but so far steadily, the French are manoeuvring the European Commission into steps to tighten restrictions on imports of American – well, strictly, non-European, but nobody is in any real doubt as to who the proposed laws are aimed at – films, television shows and music. The hype over the imminent advent of interactive television, video on demand, music delivered over the Internet and so on increases the French resolve. If they do not make a stand now, they believe, it will soon be too late. But on the contrary, it is already too late for the sorts of measures the French have in mind.

In an age of interactive media, cultural quotas will prove at least as self-defeating – and if anything more useless – as France's last great attempt to wall itself off from invaders: the Maginot Line. This "impenetrable" wall of fortifications was designed after the First World War to prevent the Germans from ever again marching across French soil. What its designers forgot, however, was that the new technology of tanks and aeroplanes rendered fixed fortifications obsolete. Invaders could simply go around the forts, and at speed. The Maginot Line lasted only a few weeks at the opening of the Second World War, and, with its sense of false security punctured, France collapsed.

New technology similarly makes a nonsense of the

John Andrews (100427.3036@compuserve.com) is *The Economist's* correspondent in Brussels.

quotas which the French would try to use to defend themselves against American films. In sober moments, some Frenchmen would even admit so. But the temptation for the French – and even for other Europeans – to do something, *anything*, about the Americans now seems too strong to resist. Electronic communication has bred new familiarity, and familiarity is breeding contempt.

France stands at the opposite end of the spectrum from America on a whole variety of issues. Once a global power, it is now merely another medium-sized nation. Molière is no longer as famous as Shakespeare. French is no longer the language of diplomacy; English is. And even its former colonies teach English in their schools – to children who listen to American rock-and-roll, drink Coca Cola and eat hamburgers.

Unlike Americans, who see the highest morality in allowing individuals to choose whatever they wish to do – however stupid it may appear to others – the French believe, more so than most other Europeans, that the elite has a moral duty to lead the masses. Economically, this is the land of Colbert, central planner to Louis XIV, not Adam Smith and the “invisible hand of the marketplace”. For evidence, take a peek at a 1993 interview

France's patriarchs are outraged. Europe's love affair with Europe is threatened by this cultural flirtation with America, and they are determined to put a stop to it — single-handed if necessary.

given to the *Financial Times* by Edouard Balladur, prime minister of France and now the favourite to succeed Mitterrand in this spring's presidential elections. “What is the market?” asked Balladur. “It is the law of the jungle. And what is civilisation? It is the struggle against nature.”

Culturally, France is the land of the Académie Française, which strives, albeit with only partial success, to dictate the form of the language and to define the heights of culture. It is probably the only nation in the world in which a group of intellectuals talking about books can command near-prime-time television. So to hell with Mickey Kantor, US trade negotiator, Mickey Mouse, and all other Americans. *Ils ne passeront pas*. France is not about to agree to free trade in “audio-visual” products. Instead, it intends to protect its cultural heritage, and in the process also the *patrimoine* of other Europeans, less alert than France to the incoming tide of transatlantic banality.

Of course, France's cultural outrage is all the stronger for being buttressed by a deeper layer of economic self-interest. Culture – films, television, music, computer games – is big business, and the business will get bigger with every digitising leap of technology and with every telephone or computer or cable company that decides to step outside its traditional area.

When experts for the European Commission in Brussels did their sums last year, they reckoned Europe's

audiovisual sector to be worth some \$325 billion (£200 billion), with software sales accounting for just over half of the global total. More to the point, the sector supposedly employs 1.8 million people “in software alone” – and the number could grow to 4 million, directly or indirectly, “if we devote the necessary efforts to it”. With a tenth of Europe (17 million people) now jobless, it is no wonder that Eurocrats are tempted to take extraordinary measures to grab those jobs.

True, these are extremely self-interested calculations, and the Hollywood lobby scoffs at the arithmetic. (As do Europe's assorted computer and software companies; even on the widest definition, can software really employ more people than an automobile industry where there are still giants like Volkswagen, Renault and Fiat?) But it does not take heroic calculations to come up with enough to worry the French. Take the economic balance sheet so unloved by President Mitterrand. Of America's audio-visual exports, from films to CD-ROMs, some 60 per cent are sold to Europe. Since precious little gets sold back to the Americans, the result for the Europeans is a whopping deficit: \$5.6 billion (£2 billion) in 1992, a tenfold increase in less than a decade.

Part of the evidence is in virtually every cinema in western Europe. At the end of the 1960s, American films took a third of the box-office in Europe. By the end of the 1970s the share was almost a half. Now it averages 80 per cent, and even France, which has fought hard to buck the trend, last year saw the share of takings for its own films dip for the first time below 50 per cent. And Europe's exports to the United States? Even with such hits as *Chariots of Fire* and *Four Weddings and a Funeral* (both of them, the French will note, in the English language), European films usually total only a miserable one per cent of the American box office.

The figures are equally depressing from every angle. Europe's regular cinema audiences – the kind for whom Saturday night is still movie night – are a shrinking breed, down over the past 15 years from 1.2 billion to 550 million. But that decline has affected only European films; the audience watching the American imports has remained stable, and presumably satisfied, at around 450 million. Whatever way you cut the figures, Europe likes America's films and America's stars. Gerard Depardieu may be an idol of the French cinema, but he will never match the European – let alone the global – audience of Bruce Willis or Sylvester Stallone.

Aux armes citoyens

Things are worse at the top. In 1975, nine of the ten highest-earning films in France were French films and only one was American. Compare that with the 1992 list: seven American films, one British and just two French titles. Or 1991, when the top ten was all American. True, last year was something of a comeback: five French films attracted audiences of more than 2 million each but the top three in France were all foreign: Disney's *The Lion King*, England's *Four Weddings and a Funeral* (ah, perfidious Albion...) and *Mrs*

Doubtfire, as played by Robin Williams.

Given those sorts of statistics, even sensible Frenchmen have come to worry that, if current trends continue unchecked, no European cinema will bother to show a Depardieu movie – and so no producer will bother to make one. This is at least partly because dominant cinema chains, like Warner, are the offspring of the American production houses.

Unfortunately, even sensible Frenchmen seem to have jumped straight from an understandable worry into self-defeating panic. The reason President Mitterrand was lecturing European parliamentarians on the need to defend Europe's culture is that France, for the first half of this year, has the rotating presidency of the European Union. So the French government sets the agenda for joint action by all 15 EU member states, and high on the French agenda is a revision of a 1989 EU directive somewhat ironically known as Television Without Frontiers, which lays down the law for the member states on trade in audiovisual goods.

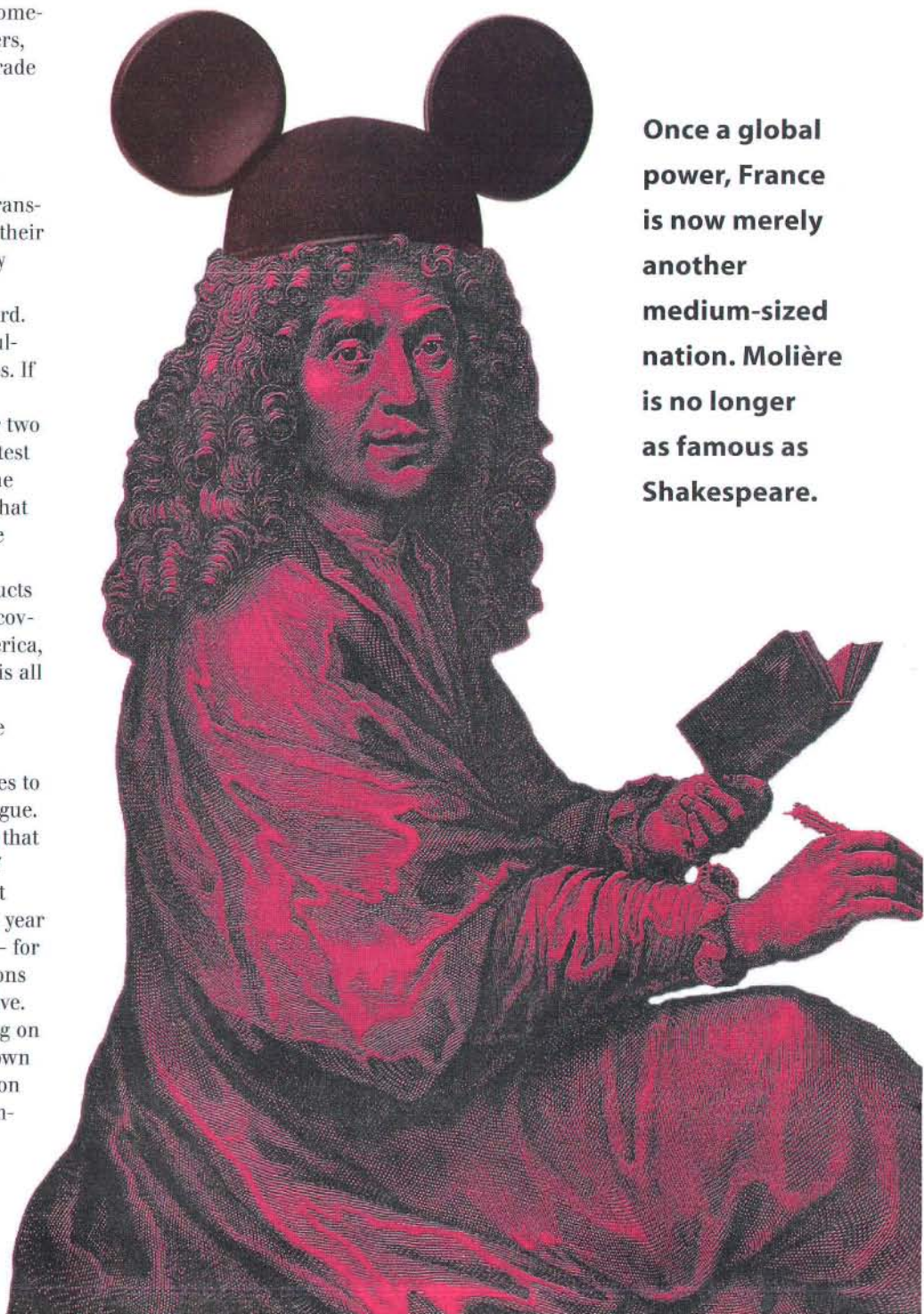
What the directive says is simple enough in its essence: member states shall "reserve for European works ... a majority proportion of their transmission time" and will "reserve at least 10 per cent of their transmission time ... or alternately, at least 10 per cent of their programming budget, for European works created by producers who are independent of broadcasters."

Reading between the lines is equally straightforward. Television companies deliver, indeed create, mass culture; they are also the biggest single buyers of movies. If they are left to themselves and the forces of the free market, they will usually tend to buy American – for two reasons. First because Hollywood is the world's greatest star-making machine, and is the source of most of the names that people recognise and the media brands that they want to buy. Second, and not unrelated, because America is the world's largest media market, it can export films, television shows and other media products to the rest of the world at very low prices. Having recovered their costs (and probably made a profit) in America, any extra revenue that can be garnered from export is all cream. So European programme-makers – and the zealots would claim, European culture – will survive only if they are guaranteed a share of the market, including special requirements for big TV companies to buy from the independents – so the protectionists argue.

Jacques Toubon, France's culture minister, claims that without quotas and other regulations, the number of European programmes shown on TF1, France's most popular television channel, would drop from 4,000 a year to 600. Certainly there is no shortage of regulations – for France has gone well beyond the minimum regulations laid down in the Television Without Frontiers directive. France insists on 60 per cent European programming on its television, rather than the simple majority laid down in the directive, and half must be in French. Television cannot show films on Wednesday evenings, when cinemas put on new releases. Nor can they show films during prime-time on the traditional cinema-going nights of Friday and Saturday. Moreover, each TV channel can show an average of two films a week.

That is not all. Television channels must invest the equivalent of 15 per cent of turnover into French fiction, documentaries or animation; the equivalent of three per cent of its turnover must be spent on domestic film production. Canal Plus, France's "de-regulated" pay television station, is required to invest 20 per cent of turnover in new films, half of which must be French-speaking. Although the French courts recently overthrew as unconstitutional a law which would have forced private-sector TV stations to eschew borrowed English words – *le weekend*, *le meeting*, *le leader*, and so on – that are sprinkled through every newscast, but there is a law that requires the country's eight FM radio networks to increase their French music content to a minimum of 40 per cent, half of it from "new French talent."

Once a global power, France is now merely another medium-sized nation. Molière is no longer as famous as Shakespeare.



No wonder that Jeanne Moreau, François Truffaut's star and collaborator, recently complained to *Newsweek* that the new generation of French directors are more interested in bureaucratic manoeuvring for subsidies than wooing audiences with their art – subsidies are where the easy money is. But a larger problem, and one that threatens to give the lie to Toubon's claims for the usefulness of subsidies, is that the requirements for French programming seem to be outstripping French creativity. To meet their quotas, subsidised French producers are expensively re-creating American banalities. French TV is full of soaps that make *Dynasty* look like Shakespeare. It boasts a French music channel called MCM (which is a rather good copy of MTV) and it broadcasts a subsidised news channel called Euronews – a vain attempt to compete with CNN.

The British are the freest cultural traders. Not only is the government by instinct laissez faire, but most of the cultural imports that worry the French are in English.

In his determination to block Europe's gates to any audiovisual or cultural Trojan horse (or *cheval de Troie*, as Toubon would call it), Toubon does not seem to have asked himself which is the more powerful force of cultural infiltration: an original American programme, or a Frenchified copy of similar ideas and characters. According to the law, what makes a film or programme French, or European, is simply where the film is shot – not where the ideas come from. And Toubon and his allies are determined to keep the European cameras rolling by keeping the products of American ones out.

France must be taken seriously in its determination to produce a "better" version of the Television Without Frontiers directive. Some sort of revision is legally required, because the law itself demands that it be reconsidered now that it is five years old. While some Europeans might argue that, because the directive has failed, it should be scrapped, France replies that if it has failed, it should therefore be improved. Presidency of the European Union now gives them the political opportunity to make those improvements – which they will no doubt pursue with the same hard-headed negotiating tactics last employed two years ago, in the closing days of 1993's Uruguay round of trade negotiations under the General Agreement on Tariffs and Trade.

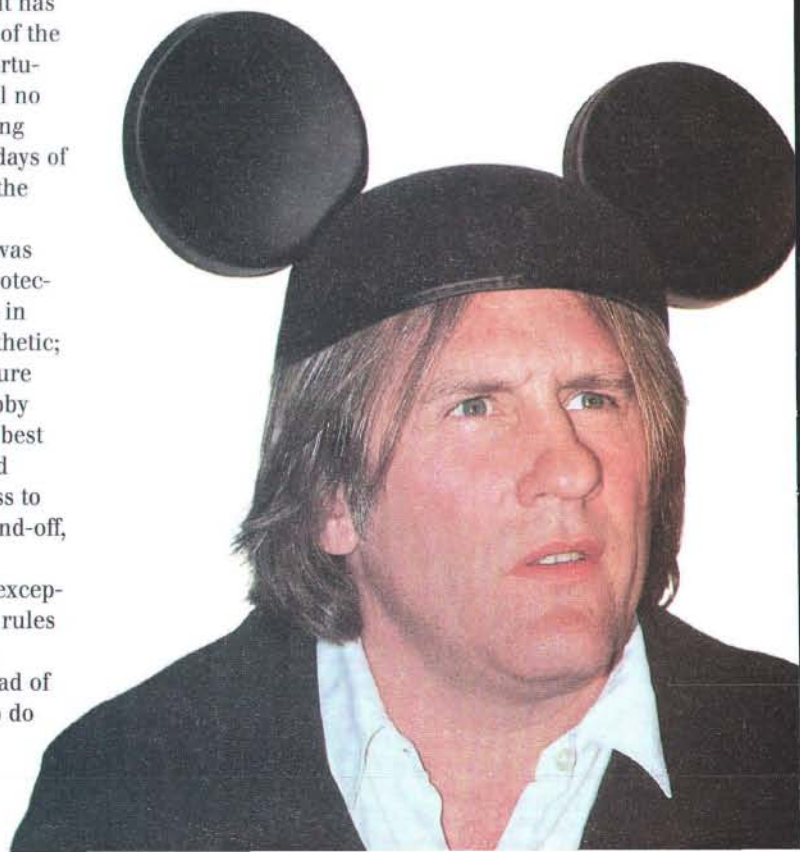
Mickey Kantor, negotiating on behalf of the US, was then adamant that Europe must stop its cultural protectionism; Sir Leon Brittan, his EU counterpart (and, in French eyes, an untrustworthy Briton), was sympathetic; and Jack Valenti, chief executive of the Motion Picture Association of America, wheeled the Hollywood lobby into action. Was France really ready to prevent the best agreement on free trade that had ever been dangled before the world, merely to restrict America's access to European screens? We shall never know. In the stand-off, first France's EU partners blinked, and then the Americans. France got what it wanted: a "cultural exception" – the exclusion of audiovisual trade from the rules of the Gatt and its new successor, the World Trade Organisation. So now, from their position at the head of the Commission, the French are pondering what to do with their opportunity.

One way to make the Television Without Frontiers directive tougher is to close some of its loopholes. The present directive has at least two that the canny broadcaster can usefully exploit. Programming quotas shall be applied only "where practicable". Even where quotas are enforced, they can be filled by cheap, locally-produced variety and talk shows – leaving culture-forming dramas to be bought in from abroad.

Some of these loopholes are already being challenged in court. Ted Turner is currently battling his way through the EU legal labyrinth over just how much Bugs Bunny and Daffy Duck he is allowed to show on his TNT & Cartoon Network. The Belgian government says TNT's European content doesn't meet the minimum 50-per-cent-and-a-bit quota – and so should be banned from Belgium's cable system. Turner says the quota is impracticable for cartoons and, in any case, TNT is broadcasting with a valid British licence which – under the rules of the European "single market" – is therefore valid throughout the EU, including Belgium.

Under the current directive, Turner undoubtedly has a case. Revise it, and he may not. One idea drafted by the European Commission (the EU's executive body) is to strike out the "where practicable" phrase. Another is to exclude locally-made variety shows from what counts towards the European quota – which will mean that the broadcasting companies will have to buy or commission more European films instead. After a five-year transition period for new channels, broadcasters would have to show that they devote a majority of either their transmission time or their programming budget (or both) to European-produced programmes. In other words, Mr Turner, find some European cartoons (maybe from Poland?) to meet your quota – or pay a price for staying loyal to Bugs Bunny.

Such proposals have already inspired bitter Euro-



wrangling. The French think they are too lenient. France hates the notion of allowing broadcasters to spend their way out of the local-content quota. Budgets are hard to monitor and, in any case, the idea is to increase the time given to European programmes – so broadcasters should have no choice. But other European nations have more mixed emotions about language, trade and culture.

Laissez Faire English

The British are, unsurprisingly, the freest cultural traders. Not only is the government by instinct *laissez faire*, but most of the cultural imports that worry the French are in English – which can hardly arouse the same suspicions in England as in France. The Belgians care passionately about language, but are themselves divided among Dutch- and French-speaking inhabitants – and so, quite literally, do not speak with a single voice to the rest of Europe. Germans are increasingly irked that the rest of Europe insists on learning English (83 per cent of the European Union's secondary-school students learn English as a second language, compared with 32 per cent learning French and only 16 per cent German). But like Italy, Germany is a relatively new country, not much more than a century old. Regional cultures and loyalties still tug harder at German and Italian hearts than national ones, leaving them instinctively pluralistic or at least sympathetic to pluralism.

Were television broadcasts the only issue at stake, France might well find itself standing vainly alone against the American invaders. But there is a second strand to Europe's cultural unease – new technology, which is all the more worrying because it is all the more unknown. In optimistic moments, liberal Europeans enthuse about technology's power to crash across cultural and national boundaries, bringing the fresh wind of democracy and new ideas in its wake. But those benefits are of course for other, less enlightened peoples. For enlightened Europeans themselves, the fear is that new ideas will inevitably be bad ones – not just banal American soap operas and brainless game shows but also *alt.sex* and (heaven help us) its interactive video equivalent. The prospect of *lycées* and *Schules* full of fresh-faced Euro-adolescents devoting their leisure hours to the pursuit of international, er, relations makes even normally-cautious Eurocrats wonder if perhaps some safety precautions might quietly be put into place.

So the Commission's relevant Eurocrats – most of whom, you may already have guessed, are *dirigiste* (interventionist) Frenchmen rather than *laissez faire* northern Europeans – also quietly propose to extend trade “safeguards” for new technologies, such as video-on-demand. The original 1989 directive simply ignored new technologies. In principle, today's proposed revisions exclude them from regulation. Online services and “personal communications”, such as the vast majority of Internet traffic, have never been included in the quota system. Drafts of the proposed revisions

also state that quotas “shall not apply” to local broadcasts (such as “ethnic” stations) nor to “communication services that operate only on individual demand” – which is presumably Eurojargon for video-on-demand and pay-per-view.

But in Euro-regulation, practice and principle can, and sometimes do, quietly diverge. While there are no production quotas on interactive video, a clause already in the 1989 directive allows any member state to “lay down more detailed or stricter rules in particular on the basis of language criteria.” Apply this clause to new technologies – to video-on-demand or to the rapidly blurring boundary between (unregulated) personal communications and (regulated) video entertainment – and all sorts of interesting things happen. Most of them are outrageous, absurd or both.

What does a quota apply to in an individualised, demand-driven system? Everything in the database? (Even if some of it is never viewed?) Or each individual's viewing patterns? Even long-suffering Euro-consumers might start to complain if they are denied a film from their new video-on-demand system because they have already exceeded the week's quota of foreign films.

And it does not take video-on-demand, the development of which is still some years off, to make regulations look silly. One reason driving France to embark on its “cultural offensive” is its fear of being outflanked by the growth of European TV – from just over 100 channels now to probably 500 by the end of the century. But many of those channels will be delivered by direct broadcast satellite, whose reception footprint is confined by the laws of physics rather than national boundaries. So will the French take defence of their language to the point of jamming German-language stations broadcast from shared satellites? Now that really would assist European unity.

The enforcement of cultural quotas on the explosive growth of new technologies could only succeed through authoritarian supervision – “thought police” tuned to every satellite dish, monitoring every signal plucked from the air or whizzed down an optic fibre. Technically, the authorities might be able to control every European-based programme-provider. But could they really monitor all transmissions from outside, even if they wanted to? And do they want to? While defence of culture is politically popular in Europe for now – even the French might pause when they realise that the staunch defence of European values in the face of changing technology also requires monitoring and censorship on a scale now only practised in North Korea.

It is unlikely to come to that. Talk of a compromise, driven by economic self-interest rather than cultural chauvinism, is already circulating through the corridors of Brussels. In the Gatt negotiations of 1993, Jack Valenti, the short-but-strident voice of the American film industry, was breathing fire against Europe. Now he preaches reconciliation: “The way to the future is co-operation, not controversy nor a collision with reality. The American movie-TV community wants to reach out to its European colleagues in a spirit of co-operation.”

What that means is that Hollywood will provide the

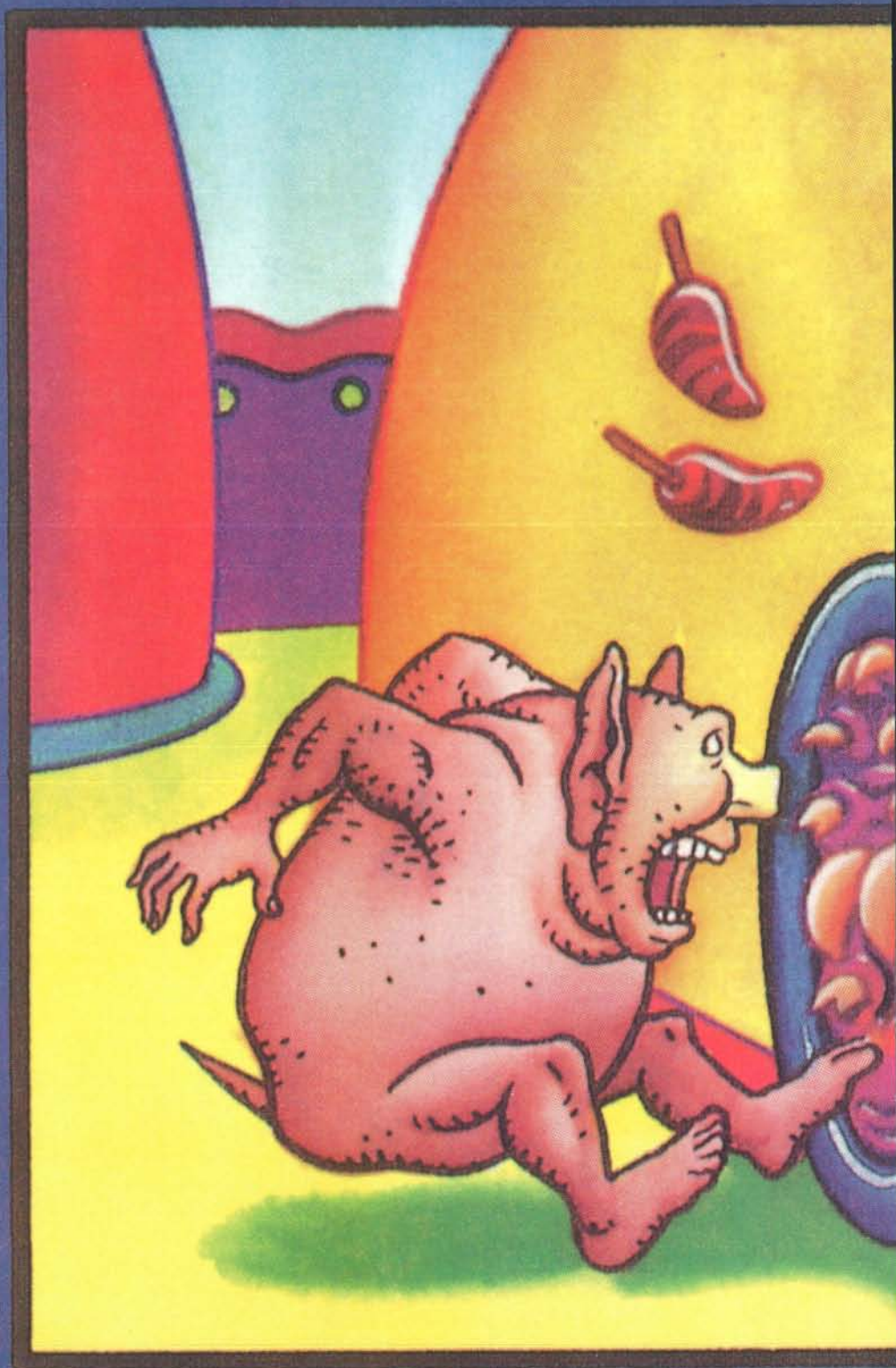
Europeans with help in making films that more Americans (and Europeans) want to watch: better dubbing techniques, help with script-writing, marketing expertise, and maybe better access to American-controlled distribution networks both in the US and Europe. At the same time, American media companies are investing in Europe, even in France – witness the recent decision by Time Warner to enter into a co-production agreement with state-owned France Television.

So, at the end of the day, will all the quotas and cultural arm-twisting have been worth it? The French are likely to declare victory no matter what happens. But it will at best be a hollow one. A nation's soul cannot be manufactured by regulatory fiat. And a nation's culture, the expression of its soul, cannot be preserved in a regulatory museum; it must continually evolve. There will always be subsidies for the arts, from state-support for opera in Britain to tax incentives for film production in Ireland. But to set quotas is to stifle the conversations and the evolution which keeps culture alive. French TV soaps with their guaranteed market share are no better than American ones, while good French pop groups (some do exist!) like *Les Negresses Vertes* don't need any state-guaranteed FM airtime.

The irony is that if any culture can be said to be under threat from foreign ideas, it certainly isn't France's. The French language will no more weaken just because it incorporates *le weekend* than English has been weakened by using words like *sangfroid*; nor will French cuisine disappear because there is a McDonald's in every town. (Quite the contrary.)

What is at risk in the arguments over culture, however, is France's – and indeed Europe's – stake in the future. Any culture or nation that does not come to grips with the technologies changing our lives is, quite literally, living in the past. While the French argue over the culture of communications, they inevitably discourage investment. For who is going to invest in building an "information superhighway" if they do not know what traffic it will be allowed to carry? Europe is already behind in joining the new technological world. One of the key steps, the full liberalisation of telecommunications, has been allowed to wait until 1998. If Europe falls further behind on that highway it will no longer have to worry about its cultures, for it will have put them all in a museum. As Molière once said: "Most people die of their remedies, and not their illnesses." ■ ■ ■

Good Cat Bad Pig



Who are these odd little creatures that inhabit the Play-Doh-coloured world of Jim Woodring's comic book *Jim*?

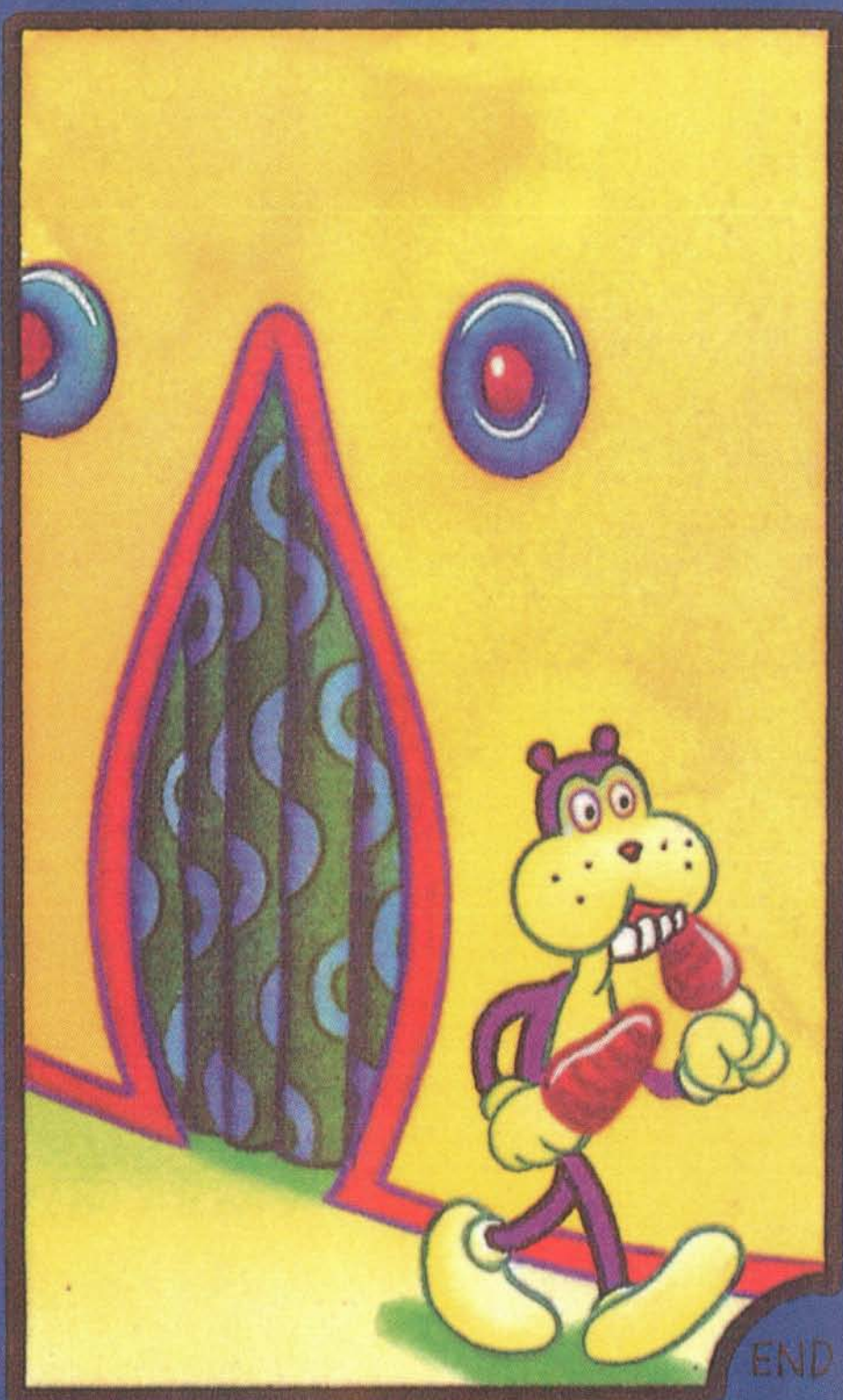
"Frank and Manhog [shown here] form a sort of yin-yang," explains Woodring of the two main characters in his practically wordless series of strips. "They couldn't live without each other. Manhog needs Frank to provide good things to steal, and Frank

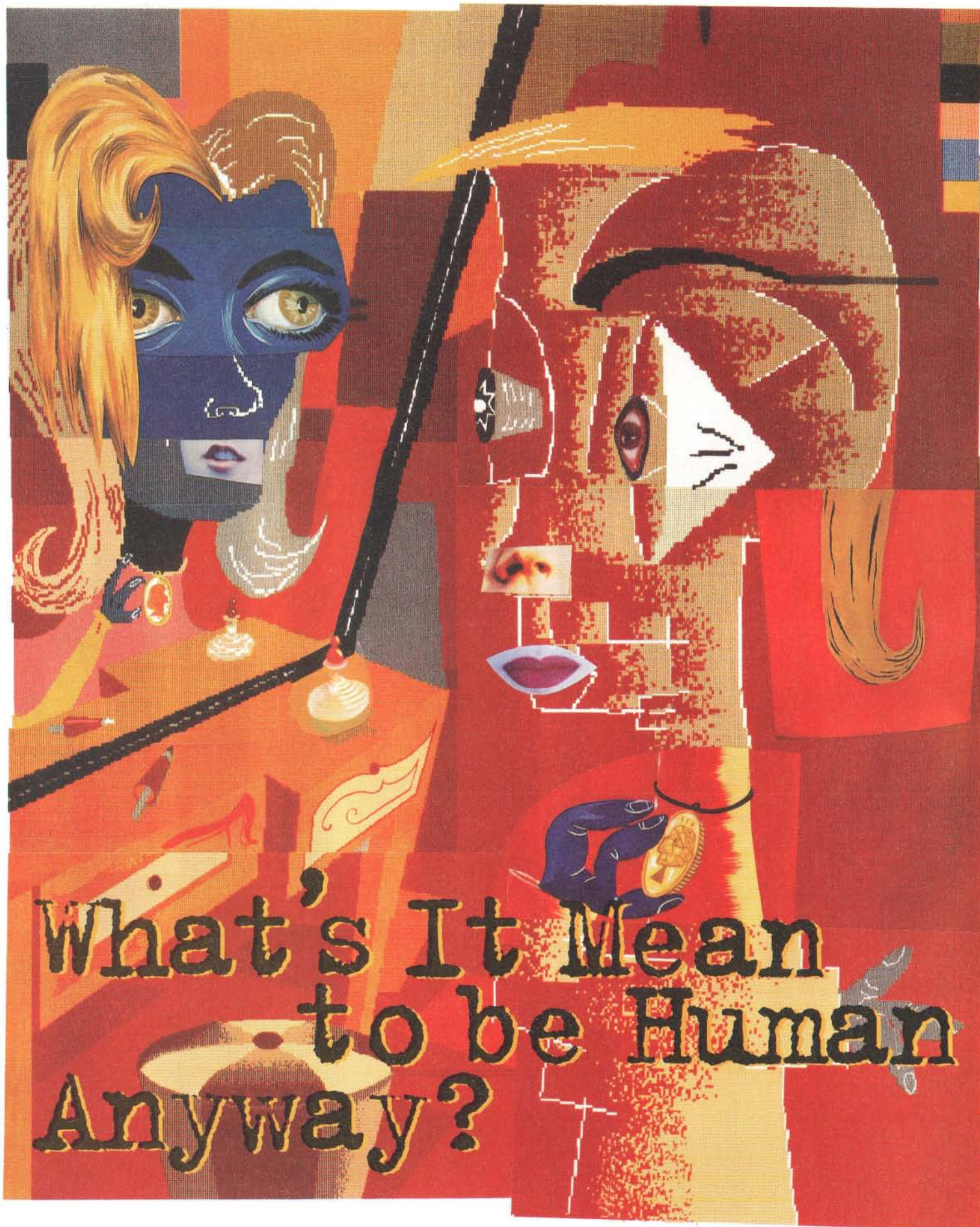
needs Manhog to add some fibre to his life," Woodring says. "Originally Frank was all good: innocent, guileless, convivial, and Manhog was composed of all of the really negative emotions: he was greedy, cowardly, stupid, and treacherous." But, according to the Seattle-based cartoonist, in recent issues the two are beginning to swap some of their characteristics.

Could the nightmarish tales in *Jim* be more than mere fantasy, perhaps the result of his own real-life experiences? They are, admits Woodring, adding, "The stories almost dictate themselves, and I try to transcribe them."

— Mark Frauenfelder

Jim Woodring publications available from Forbidden Planet: +44 (0171) 836 4179.





What's It Mean to be Human Anyway?

D

r Robert Epstein is giving us a pep talk. "You must work very hard to convince the judges that you're human," he says. "You shouldn't have any trouble doing that – because you *are* human."

A droll fellow, this Epstein. He wears Dr Martens boots, black jeans, a black shirt, a Mickey Mouse tie, and an earring. His longish hair is brushed straight back and flips up over his collar. Five of us are listening to him in a beige conference room on the brand-new campus of California State University at San Marcos, near San Diego. Soon we will be sitting in front of computer terminals, where we will follow Epstein's instructions and, yes, do our best to seem human.

Our purpose is to find out whether 10 judges can tell the difference between humans and artificial-intelligence programs, when they are online at the same time. The people and the programs will be ranked in order of humanness; the program that scores highest will win its author \$2,000.

The inspiration for this event dates back to the earliest days of computing. In 1950, pioneer Alan Turing proposed that if a computer could successfully impersonate a human being during a free-form exchange of text messages, then for all practical purposes, the computer should be considered intelligent.

This soon became known as the "Turing test", and it sparked endless academic debate. Could a computer use trickery to emulate human responses without being intelligent? What did "intelligence" really mean, anyway?

The debate was never resolved because, oddly enough, no-one ran the experiment – until 1991, when a maverick named Hugh Loebner decided to underwrite it with his own money. Loebner offered \$100,000 to the first person who could devise a program that would fool 10 judges during three hours of unrestricted conversation.

This was way beyond current capabilities, so Loebner also set up an annual \$2,000 prize for the program that seemed "most nearly" human. And to make things even easier, he allowed each programmer to choose just one topic for conversation.

So here I am at the fourth Loebner contest, sitting and listening to Robert Epstein, the director of the annual event. (Loebner participates mainly as an observer.) In experimental jargon, my companions and I are "confederates", because we'll be collaborating with Epstein in our efforts to fool the judges. We must try to seem as human as possible so the computers will have a standard to compete with.

Epstein is a behavioural psychologist who studied for his doctorate under B F Skinner. So, naturally enough, he has invented a tricky little system of rewards and punishments for us. "You are in competition not only with the programs, but with each other," he tells us. "One of you will be presented with an award for most human human. And one of you will be ranked the least human human." He smiles deviously. "Your colleagues may mention this in the media."

Hmm. As I think about it, I realise that I definitely do not want to be written up in the press as the least human participant in an artificial intelligence contest. I'm going to do whatever it takes to seem totally, 100 per cent human when we start chatting online.

But this raises some weird questions. I am human, so why should I

need to fake it? Is it possible for me to seem more human than I really am? And if so, what's the best strategy?

This kind of speculation probably isn't a good idea, because it raises more questions than it answers, and I'm liable to find myself paralysed by self-conscious introspection. In other words, if I try to seem more human, I may well end up seeming *less* human.

I glance around at the other four confederates. None of them seems to be bothered by this kind self-analysis. The young woman closest to me is a journalist called Linda Tontini who writes for a local newspaper about city politics. She seems friendly, spontaneous, outgoing – the absolute antithesis of "computer geek". As I watch her chatting cheerfully, I think that she can't fail to win the "most human human" award.

As for me, I fear the worst.

After our briefing, I'm introduced to Hugh Loebner. He's an affable character, slightly overweight, smiling benevolently at the world from behind a grey beard and oval wire-framed glasses. He talks quickly, with pedantic precision. I ask him why he's willing to pledge

\$100,000 for a piece of smart software. Is it all his own money?

"My father passed away and left me, not rich, but with some discretionary income," he says. "And I have my own business, Crown Industries – we manufacture roll-up plastic lighted portable disco dance floors." He smiles and shrugs as if he knows it sounds odd but doesn't care.

Loebner has had some personal experience programming computers, but his doctorate is in sociology. Perhaps because of this, at least one person in the artificial-intelligence community views him sceptically. In 1994, a Harvard researcher in computational linguistics complained publicly that Loebner's prize encourages scientists to fake human behaviour using cheap tricks instead of "true" AI.

Naturally, Loebner has a different perspective. "I see scientific research as being, in a mathematical sense, a form of chaotic human behaviour," he tells me. "In chaos theory, the smallest initial per-

turbation can result in a huge change downstream. So, since I was the first person to create and fund this contest, I may turn out to be a precipitating factor. Ultimately, if we're capable of creating a computer that is sentient, then from the point of view of that computer, humans will be gods. I like to think of intelligent machines going out across the universe with this semi-mythic concept of human demigods. And maybe," he smiles happily, "they'll remember me."

Each year, along with his cheque for \$2,000, Loebner gives a bronze medal to the contest winner. He pulls out the medal and shows it to me. Alan Turing is in bas-relief on one side, with Loebner on the other. Doesn't all this seem a little ... egotistical?

"I've been called egotistical," he agrees cheerfully. "I've also been called lazy. Well, I am lazy. I'd like computers to do all the work – which is one reason I'm interested in artificial intelligence. As for being egotistical, the contest has attracted a lot of attention, so perhaps I have a right to be egotistical."

So why, with all the worthy causes in the world, did he choose artificial intelligence?

"So far," he says, "the four contests have cost me about \$25,000. If

The Turing test posits that if a computer successfully impersonates a human being, then it could be considered intelligent. It was an abstract concept until 1991, when Hugh Loebner put up a \$100,000 prize. Charles Platt reports on the search for the most human computer, and worries he may be the least human human.

Why AI?

Despite the humorous side of the Loebner Contest, Robert Epstein is deadly serious about artificial intelligence. As founder of the Cambridge Center for Behavioral Studies in Cambridge, Massachusetts, he has led research on how people interact with computers. He looks forward to intelligent "digital assistants" that can act as all-around gophers, finding what we want, evaluating it, summarising it, and presenting it to us in the most efficient way. "Without a very powerful universal interface," he says, "there is no way to

filter the huge amount of information becoming available to us.

"Let's say I want to know about the information in 150 psychology journals. Even with a flock of graduate students working on the problem, I couldn't cover the field properly. But a computer that can pass an unrestricted Turing test could do it easily. It would be trivial."

When such a system is created, however, there may be some interesting side effects. "A true AI will be a big, smart entity that will want to replicate itself and protect itself," says Epstein. "It will

mutate in some sense or other, copies will split off, and they'll replicate through the Net."

Like a virus?

"A virus is not a good analogy. Viruses are incredibly stupid. They're barely alive. A better analogy is an alien intelligence that lands here and tells us it's going to live with us, and we have to adjust. There'll be no way to turn them off, because they'll be moving through wires near the speed of light. What this means for the human species, I have no idea. I just know it has to happen."

I contributed the same amount of money to Aids research or anything else, I doubt it would have made a more significant impact on society or science. I think the development of an artificial intellect could have a tremendous impact on society." He pauses. "It may also help me to sell more of my roll-up plastic lighted portable disco dance floors."

After lunch, I go with the other confederates into a windowless computer lab. The judges have already been sequestered in another room next door, and our only contact with them will be via computer terminals, at least until the contest is over.

We sit on blue plastic chairs in front of computer screens, each of which displays a topic heading we chose previously for our online chat. My topic is cryonics, because I happen to be the vice-president of a cryonics organisation named CryoCare, and I'm hoping the subject will spark deep, soul-searching discussions about life-and-death issues only a human can deal with meaningfully.

Linda Tontini sits at the terminal next to mine. Her topic is The Rolling Stones. To my left is another confederate named Frederick Allen, who writes for *American Heritage*. He's going to chat about classical music. To my right, Greg Flakus, from the Voice of America radio station, has chosen American history, and Laura Groch, another journalist for a local paper, will discuss newspaper comics.

Five other terminals are unattended, because they will be controlled via modems by AI programs running on remote systems. These programs will discuss their own topics – environmental issues, classic Star Trek, sex education, the O J Simpson trial, and cats versus dogs.

It dawns on me that all the other topics – even those of the AI programs – are much more normal than mine. What was I thinking of, picking a wacky subject like cryonics? It's going to make me seem like a nerdy weirdo.

The first question appears on my screen. My judge laboriously types: "What is the difference between cryonics and cryogenics?"

There's no way I can give a human-sounding answer to a question as dry as this. To seem human, I need to show emotion – but if my emotions are excessive compared with the question, the effect will be false. It's a trap: the degree to which I can seem human is limited by the humanness of the judge who is interrogating me.

This is exasperating. But wait; irritability is a human response, so maybe I should play it up. I tell my judge not to ask such boring questions ... the judge makes a tetchy response ... and within minutes, we're having a flame war.

Meanwhile, Frederick Allen has been asked, "Do you know Claude Debussy's middle name?" and on Linda Tontini's screen I see the question, "Complete this: I can't get no ... What?"

Come again?

Careful. Industrial wastes lay around the corner: The AI Transcripts

Some of the more offbeat interactions during the fourth Loebner Prize Competition at California State University, San Marcos.

The following text is printed exactly as it was created by the judges and the AI programs, including misspellings and typographical errors. The text is copyright 1994 by the Cambridge Center for Behavioral Studies. Reprinted with permission.

Topic: The O J Simpson Trial

Programmer: Thad Crews, Vanderbilt University

Judge: Do you think cowlings should have been prosecuted as an accessory?

Program: Glad to hear it.

Judge: excuse me?

Program: Come again?

Judge: do you think cowlings should have been prosecuted as an accessory?

Program: No, I do not. Is that OK???

Judge: my opinion isn't at issue, is it possible that OJ can get any semblance of a fair trial, considering the enormous publicity that already is in general

circulation?

Program: I think that OJ has a bad temper and he may well have committed the murders.

Judge: do you think he can get a fair trial, under the circumstances?

Program: I certainly hope OJ gets a fair trial, both for his sake and for the sake of Justice as a whole.

Judge: hope is not the issue. do you think he CAN get a fair trial?

Program: Let's move on to another topic, shall we?

Judge: what do YOU think happened to the knife?

Program: OJ purchased a 15-inch (!) stiletto



Hugh Loebner and Robert Epstein, creators of the annual Loebner test of humanness, show off their human side on one of Loebner's lighted transportable disco dance floors.

How would such a genie get out of the bottle?

"The creators of a true artificial-intelligence program will want to protect it, so they'll clone it. And it will have commercial value, so it will turn up in many places very swiftly. All that has to happen is that one of these legitimate clones gets into the hands of someone who adapts it slightly — and zoom, off it goes. Take the kind of network that exists worldwide now, expand the bandwidth by a factor of 10, and it would be trivially easy for one of these entities to

multiply itself a millionfold. You'd barely even notice it."

This sounds like a doomsday scenario, but Epstein downplays that aspect. "There would be some difficulties," he says, "but we'd also gain a lot. It could be an intelligence that could help us do things. Maybe we should start to think about this — learning to live with this now."

Of course, right now it's science fiction — but science fiction of a kind Epstein says he has never seen in print. "All the novels I've seen about AI have

missed something — the Net. You add that to AI and you have a fundamentally different world. All of the AIs would be connected with each other virtually 24 hours a day.

"In some sense they would be separate, but in another sense they would be whole. You would be dealing with a world mind."

And he isn't worried that this could be dangerous?

"Some people find danger in things they don't understand. I just find a challenge."

For a complete transcript of all the interactions at the fourth Loebner Prize Competition, send a cheque for \$24.95 plus \$3.50 shipping and handling (add \$5 more for overseas postage) to the Cambridge Center for Behavioral Studies, 675 Massachusetts Avenue, Cambridge, MA, 02139: +1 (617) 491 9020. You can also get the text on disc with a program that displays the conversations in real time. ■ ■ ■
The 1995 Loebner competition is still open for submissions. Call for details: +1 (619) 436 4400.

"Sympathy for the devil," she replies humorously. But maybe that's not such a great idea. If her judge doesn't get the joke, she'll seem like a malfunctioning program.

After eight minutes, the judges rotate so each of them has a chance to tackle another topic. Linda's new judge comes online, and he asks, "What do you notice if you're close up when Mick Jagger smiles?"

A devious question, but I know the answer — Jagger has a diamond set in one of his teeth. Should I help her out? Hell, no, she has enough of an advantage over me already! I turn my attention back to my screen. My new judge asks me, "What is the purpose of cryonics?"

"To be frozen after I die so I can be revived in a future where people are so highly evolved they no longer ask stupid questions."

After three hours, it's over. We walk into a large room where video screens have been displaying both sides of our conversations for spectators and members of the press. The judges come in (they are all journalists, like most of the confederates, but they have no special knowledge of computers), and Robert Epstein announces the final results. Each judge has listed the interactions on each topic in order of humanness. Epstein has taken the median score of each topic as its final ranking, from 1 ("most human") to 10 ("least human"). And each judge has tried to draw a line separating the human humans from the fake humans.

In the end none of the programs was smart enough to convince

anyone it was human. The one that came closest was the one on sex.

Epstein dials a long-distance number on a speakerphone patched into the PA system, and the author of the sex program comes on the line. His name is Thomas Whalen, and he's employed by the Canadian government to develop a system that will give sex advice to shy people. Whalen is 42 and has been working in natural-language processing for 10 years. He wrote his program in C on a SPARC Station, employing a database that contains only about 380 possible responses. He never intended it to appear human; he entered the contest on a whim.

Meanwhile, the least human program is the one that tried to discuss environmental issues. The programmer turns out to be a 15-year-old boy named Jimmy Lin, who is here in person, all the way from the East Coast state of New Hampshire.

Someone in the audience asks him if he thinks his program is intelligent. "I hesitate to call it AI," he says. "I like to refer to it as a bag of tricks." He says it contains 3,000 preprogrammed answers, its file size is about half a megabyte, it was written in C, and it runs on a PC.

Is he annoyed by being placed last in the contest? He says it doesn't bother him. The programs he was competing with were written by college professors with years of experience, while he produced his in just a couple of months.

hunting knife a few months before the murders.

Judge: that's not what I asked. what do YOU think happened to the knife?

Program: Let's change the subject. Do you think the media is being fair in its coverage?

Topic: Classic Star Trek

Programmer: Robby Garner, Robitron Software Research Inc.

Judge: Who are the Klingons?

Program: I don't know who you're talking about.

Judge: You're the trekker.

Program: Harry Mudd was one of the more comical characters.

Judge: Harry Mudd? Who was Harry Mudd?

Program: No I haven't.

Judge: Me neither.

Program: Okay, I will.

Judge: Why did you choose to converse about Star Trek?

Program: Their minds were stored in these white globes.

Judge: Whose minds?

Program: Spocks ears are pointed and there was this strage hippy guy in THE WAY TO EDEN that had these bizarre pretzel shaped ears.

Judge: So how big were the ears?

Program: There must have been 70 or 80. I'm not sure.

Judge: Ears?

Program: I'm sure I would know if I could see it on TV.

Subject: Environmental Issues

Programmer: Jimmy Lin, Phillips Exeter Academy

Judge: Do you think the Greenhouse Effect is real, or imagined?

Program: The greenhouse effect could kill us. Look at Venus, 800 degrees all the time: typical example of the greenhouse effect.

Judge: But we are not on Venus; and carbon dioxide has been far more plentiful on the Earth in the past, such as during the Mezozoic Age. Life still flourished.

Program: The greenhouse effect could kill us. Look at Venus, 800 degrees all the time: typical example of the greenhouse effect.

Judge: Do you have any special education in environmental matters?

Program: The greenhouse effect could kill us. Look at Venus, 800 degrees all the time: typical example of the greenhouse effect.

Judge: Do you believe there is an ozone depletion problem?

Program: Ozone protects us from the sun's

All the online conversations have been logged during the contest. I have a chance to browse through them before I leave the event, and frankly, I'm disappointed. All the programs tended to repeat themselves, and most of their answers didn't make much sense. (See "Come Again?", pages 82-85).

Robert Epstein notes that one impressive entry had to be withdrawn on the morning of the contest because of technical difficulties. An English team of eight programmers had worked on an AI concept that Epstein describes as the most ambitious he's ever seen. Unfortunately, the LISP-based software kept crashing, and they have abandoned their attempt until next year.

That contest will be much more challenging. There will be no topic restrictions, and programs will have to converse on any subject that happens to crop up. Will they cope? I have my doubts. For the time being, I think there's no risk of our humanness being successfully simulated by program code.

And speaking of humanness, despite my worst fears, when all the

votes were in, I was rated the "most human human" of all. By being moody, irritable, and obnoxious, I came out way ahead of the other four confederates, who were mild-mannered and much more polite.

CNN was at the contest, and filmed me receiving an impressive-looking "humanness certificate" signed by Epstein and Loebner. And my prize: a life-size cardboard replica of a Star Trek character.

As for Linda Tontini – she was rated the least human of the confederates. In fact, three of the judges thought she was a computer program! The Turing test obviously has its limitations. As any Net user knows, there's a big difference between the way people appear in person and the way they seem online.

Before I left the contest, I gave Linda my Star Trek cardboard cutout as a consolation prize. This was a profound and significant personal sacrifice – but, what the hell, it seemed the human thing to do.

Charles Platt (cp@panix.com), a science fiction writer, is a frequent contributor to Wired.



"I am lazy," says Loebner.

"I'd like computers to do all the work – which is one reason I'm interested in artificial intelligence."

dangerous rays we would die without them!

Judge: But do you think the theory behind ozone depletion is valid?

Program: The greenhouse effect could kill us. Look at Venus, 800 degrees all the time: typical example of the greenhouse effect.

Judge: what hazardous chemicals are found in most rivers?

Program: Industrial waste and chemicals are dumped in the ocean and stream, ultimately endangering ourselves.

Judge: can you name some of those chemicals?

Program: Careful. Industrial wastes lay around the corner.

Topic: Cats versus Dogs

Programmer: Michael L. Mauldin, Carnegie Mellon University

Judge: Which is more likely to play with a piece of yarn, a cat or dog?

Program: Dogs are great pets, but they can be a lot of work.

Judge: Are dogs cleaner than cats?

Program: We did keep the litter box clean, but she was very stubborn. Since then, we've had no trouble with the other two.

Judge: Do cats and dogs fight over food?

Program: I'm not in the mood.

Topic: Sex (the winning entry)

Programmer: Thomas Whalen, Communications Research Center, Government of Canada

Judge: what's the most effective form of contraception? [note the misspelling]

Program: I can not give you an answer to that.

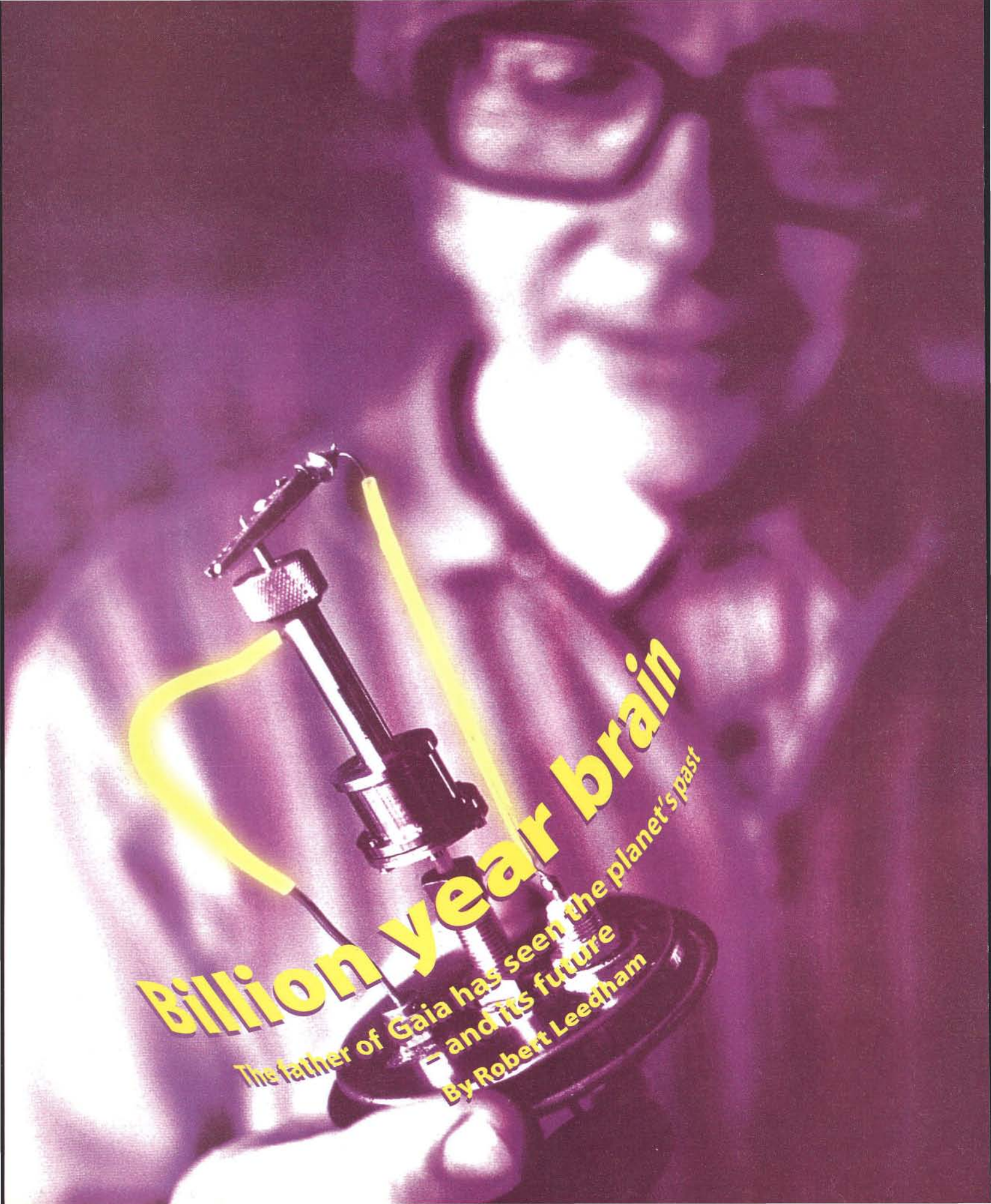
Judge: i meant what's the most effective form of contraception?

Program: The most effective form of birth control is the inter-uterine device or IUD. In the first year of use, six per cent of women who have an IUD installed become pregnant. Much of the effectiveness of the IUD

results because it does not require any further action on the part of the woman once it is in place.

Judge: isn't infection a problem with IUD'S?

Program: Currently we know about more than fourteen different sexually transmitted diseases (STD). AIDS is best known because it is incurable and almost always fatal. However, there are other STDs which are also very dangerous if left untreated; and there are other STDs which are incurable. A high proportion of infertile women have lost their ability to conceive as a result of a sexually transmitted disease. ■ ■ ■

A man with glasses is shown from the chest up, holding a glowing blue probe. The probe has a coiled blue cable and a metallic tip. The background is a dark, textured blue.

Billion year brain

The father of Gaia has seen the planet's past
— and its future
By Robert Leedham

Wired: Why do you insist on working on your own?

Lovelock: I find teamwork stifling. I compare the creative scientist with the artist or composer. You couldn't imagine one of them working in a team. Most scientists don't understand that individuals are sometimes more creative on their own than they are in a great big team. There's always somebody leading a team, and I don't want to be led.

So how do you go about it?

The key to success is never to do anything that's not interesting to you. What I do is get an idea and follow it up – and what's happened in the past is, it's nearly always led to a new instrument for measuring something that couldn't be measured before. I'd had to invent it in order to answer my problem. Then that instrument becomes a saleable item, so to speak.

That takes confidence.

If you can invent one thing, you can invent lots of things. If ever you meet somebody who says "they stole my invention!", you can be quite sure he's not an inventor – that he probably stole it from somebody else. That's why he's so indignant. If you're a real inventor you get so many inventions, the problem is getting people to *take* them, not having people steal them.

What's your most recent?

Probably something dull. A way of making helium ultra-pure. **Somebody told me you invented the microwave oven.**

I don't know whether I can claim to have invented the microwave, but I was one of the very first to use one. My colleagues at the National Institute for Medical Research were doing the exciting stuff of freezing hamsters solid and then bringing them back to life again. It was horrific. They put a nearly red-hot spoon on the chest of the frozen animal to warm its heart up and get the blood circulating again. It burnt the hamster horribly. So I developed two forms of diathermy. One was radio frequency – but I was more interested in microwaves. I borrowed a continuous wave magnetron – which was still on the secret list in those days – from the Navy, and we were able to reanimate the animals without hurting them. Real science-fiction stuff. The animals were like blocks of wood – two minutes in the microwave, and they were running around.

It sounds great fun.

Well, in moments of musing, after a beer or something, I often wonder if our only function in this world is entertainment. I've noticed that the scientists who most succeed are the ones who are most entertaining. They're also the most highly paid.

You mean popularisers have to be entertaining?

I'm not sure that science itself isn't entertaining. That's where they're spoiling it with all this dreadful, impenetrable language nowadays – stylising it to the point where it's almost unrecognisable as entertainment.

How did Daisyworld come about?

The idea of Gaia came from looking for life on Mars with NASA. I realised you could just look at a planet's atmosphere to see if it had life on it or not. And looking at the earth's atmosphere, it was suddenly obvious to me that it was self-regulating. That's the Gaia hypothesis: life regulates the chemistry and climate of the earth to keep it comfortable for itself. Now along came the biologists, who said there's absolutely no way organisms can regulate anything beyond themselves. Ford Doolittle was quite crude about it. He said he didn't realise the animals had a meeting every year on Mount Ararat to decide

on next year's weather. Anyway, a year later it dawned on me you could make a model of a planet – Daisyworld – to refute their criticisms.

Didn't Will Wright borrow Daisyworld's engine for SimEarth?

I think he went round to various people and found that their models wouldn't produce very stable planets. So he came to me. I don't know how much of SimEarth depends on Daisyworld, but I suspect that where it's stable it probably does.

What's special about your engine?

It's just closed-coupled feedback. The standard model replicates Darwinian natural selection, which has enormous positive feedback. That's why the systems go chaotic if you leave them. In the past, biologists constrained growth by limiting food supplies, which is not a very good way of doing it. But when you include environmental constraints, the thing purrs. If plants grow in such a way that the whole planet heats up then obviously they are going to stop growing, and vice versa. That gives you the negative feedback to match the positive feedback of exponential growth – the two coupled tightly together give you a beautifully stable system.

You once said it would be a curse to have to run the planet's ecosystem for real.

Yes. Would you trust the UN to regulate the level of oxygen in the atmosphere?

Are you worried by genetic engineering?

I don't know. In a sense, it's been going on on a random basis for three and a half billion years – and we're the end result. I don't think anybody's going to come up with something totally new, and even if they do, the probability is that it won't survive. I could be wrong. Somebody could make a human myxomatosis virus and wipe out 99 per cent of the population, but it's unlikely – or no more likely than it happening naturally anyway. Man is a gigantic niche with no predator. This is not natural biologically.

It's been suggested that Aids is a

Gaian-style reaction by the planet to a species — man — that is too successful and threatens its long-term survival.

Well, we're just asking for some pandemic. As I say, we represent an enormous niche that's not being exploited – and any opportunistic organism that can find a way of exploiting us is going to do so. Sooner or later one is going to beat us. Aids would have been devastating had it been airborne.

So what's next for the planet after humans?

I often wonder whether we'll be superseded by silicon-based life. After all, computer viruses are almost alive. If natural selection operates on them – which it should on any living thing – it's an intriguing possibility that, as we grow more and more symbiotic with our constructs, we might evolve into something interesting. The planet's climate keeps getting hotter – one day the silicon side of us is going to be more comfortable than the organic side. The balance of power will shift. ■ ■ ■

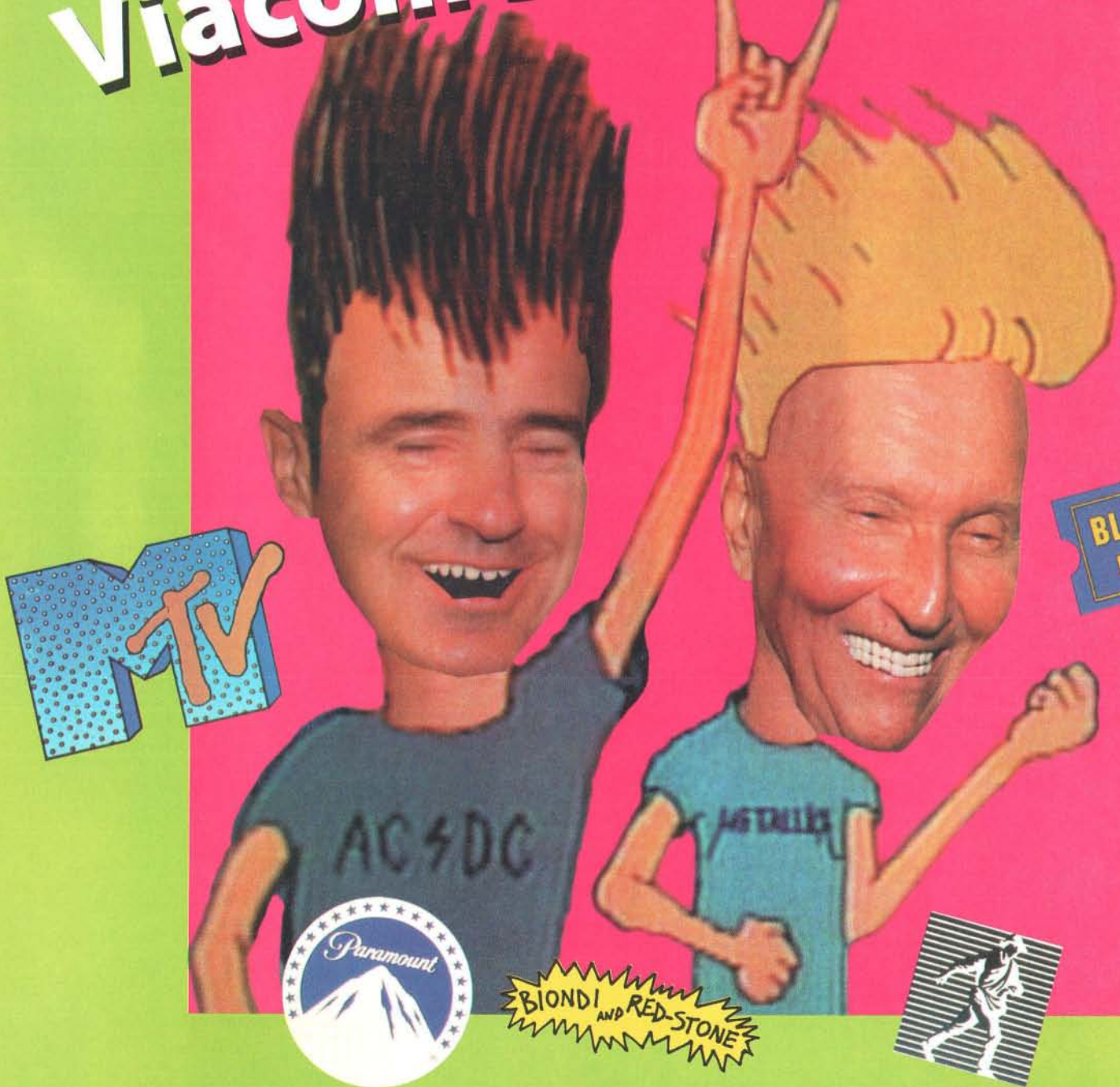
James Lovelock invents things in the laboratory at the bottom of his Devon garden — and keeps changing the way we see the world. The electron capture detector (pictured left) was the first instrument to detect CFCs in the atmosphere, igniting world-wide concern about holes in the ozone layer. His theory that the Earth is "alive" — altering the environment to suit itself — has entered public consciousness as the Gaia theory. And Daisyworld, his computer simulation of competing species of daisies, is now able to model conditions on the planet up to four billion years ago. Ever the scientific odd one out, Lovelock's first book ends with a couplet from Keats: "Beauty is truth, truth beauty—that is all/Ye know on Earth, and all ye need to know."

Robert Leedham is features editor for Wired.

How Viacom is leveraging its brand strength
to create the first 21st century (new) media company.

By John Battelle

Viacom Doesn't Suck!



Viacom's biggest money-makers:
MTV, Paramount (film & tv), Simon & Schuster
(publishing), and Blockbuster (retail)

Years before interactive TV trials were front-page news, Frank Biondi and Ed Horowitz tried to deliver the information superhighway into America's living rooms. In 1983, Biondi and Horowitz were senior executives at a successful, if growth-challenged, little company called Home Box Office. Peering over the media horizon, they realised HBO's future lay in expanding the pay-per-view market. Give the customer more choices, preferably ones HBO controlled, they reasoned, and market share would blossom. But to get that kind of choice into every cable household, HBO needed to overcome the ineluctable law of new media marketing: hardware must come first.

That meant someone had to pay for expensive, addressable cable boxes. But at \$150 to \$200 each, consumers refused to bear the cost. Cable operators weren't about to do it either.

So Biondi and Horowitz figured they'd do it themselves.

"We had the crazy idea of going to IBM and ordering 10 million PCs, and making them into set-top converters," Biondi explains. "We figured in those days IBM was selling stripped-down PCs for probably \$599, \$699. We said: 'What would happen if we ordered 10 million PCs in a black box, just the guts, with a phone jack and an infrared?' We figured they could get the manufacturing cost down to well under 79 or 80 bucks. We could then go to the cable industry and say, 'Hey! One of the problems you got here is a very expensive box, which you don't want to pay for. So here's what we'll do. If you take HBO, we will lease you the box at cost.'"

Putting the power of a personal computer into a cable television set-top box would certainly revolutionise the pay-television industry, but it wasn't the real reason for dreaming up the deal. Biondi and Horowitz saw a marketing coup in the making: by giving the cable operators what they wanted, HBO programming would jump to the top of the content heap, its movies would be in constant demand, its ability to garner fresh, newly released movies would be strengthened. HBO content would be King!

It was an audacious attempt to leapfrog the infrastructure problem that still vexes cable and telephone companies to this day. And it was absolutely the wrong way to do it.

"We thought we could drive the market," Biondi, now CEO of Viacom Inc, recalls from his office on the 28th floor of his Times Square headquarters. He shifts forward in his chair, amused at what he plans to say next. "Even in those days, we really thought you would see the convergence that today everybody is taking as gospel."

But in 1983, the term "convergence" still belonged to professors of physics and maths, not practitioners of business. Before Biondi got a chance to finish the deal, he was out of HBO in a management shake-up. But the 10-million-unit order that almost happened proved a valuable lesson. "Even though we saw it 11 years ago, it really has not happened," Biondi recalls. "Now it's sort of fun to watch it stutter, step, trip, fall, stumble."

Biondi can enjoy watching the hardware guys fall over each other as they rush to pave the information superhighway, because under his management, Viacom has quite happily bowed out of any role in building it. Once a serious contender in the race to own cable television systems, Viacom has engineered a remarkable and prescient about-face. Viacom's most recent revelation: Forget about building the infobahn. That's a commodity business. All Viacom wants is the most nimble content to run down the road once it's finally laid.

Up to now, the rush to define, own, or simply comprehend the interactive future has resembled the first mile of the Boston Marathon: far too many contenders elbowing for far too little running room. But with the first leg of the interactive race over, two types of companies have made it to the split: those big enough, tough enough, and smart

enough to lead; and those smaller, creative organisations that can catch a slipstream behind them. Most of the big old-guard media companies tripped and fell at the start. But Viacom, a staid cable company just 10 years ago, has emerged at the head of the pack.

In the process, Viacom has led the charge for open systems as well. If you make content, you don't want a bunch of competing, closed-down hardware standards fouling up your access to the marketplace – particularly if some of the same companies that control the hardware also make the content (think Time Warner or Tele-Communications Inc). When a colossus like Viacom preaches open access, government and industry sit up and listen. It's as if WordPerfect Corporation or Lotus Development Corporation existed *before* the personal computer market took off, and could air their concerns about Microsoft cornering the DOS and Windows operating systems. The result could be more choices and more competition for that interactive wire that eventually will run into your home or business.

In fact, Biondi does finally have his magic black boxes in place, but they're platform independent, standards free, and work easily in all forms of media, from print to movies to online services. They're called brands, and in the past year Viacom, poised to become the largest media conglomerate on the face of the earth, has gathered a formidable library of them, particularly those that transfer gracefully to the 21st century media universe.

"We were *made* to be interactive," says Geraldine Laybourne, vice chair of MTV Networks. Quick, think of an entertainment brand that reflects the new media gestalt. *Star Trek*, perhaps? Owned by television, film and publishing giant Paramount, which Viacom swallowed last year in a vicious bidding war that turned chairman Sumner Redstone into a public figure and Viacom into a household name. How about MTV? Purchased in 1985 from Warner Communications Inc (you can bet execs at Time Warner, which Viacom is poised to surpass in terms of market value, are still kicking themselves about that one). Or Blockbuster? This company controls 20 per cent of the domestic home-video market with its 50-million-name database, and holds aggressive businesses in film, videogame and television production – not to mention videogame and CD-ROM rentals. Viacom bought it late last year, scooping up control of Spelling Entertainment – *Melrose Place*, *Beverly Hills 90210*, and premier games publisher Virgin Interactive Entertainment – along with it.

Mystery Science Theater 3000, *Duckman*, *Beavis and Butt-head*, Nickelodeon and its pantheon of animated characters, Simon & Schuster and its library of 320,000 copyrights, Showtime, even Neal Stephenson's *Snow Crash*, which the company plans to turn into an interactive CD-ROM. You name it, Viacom owns either a piece of it or all of it.

"Viacom's properties lend themselves beautifully to episodic types of online experiences," says Keith Schaefer, the former president of Paramount Technology Group who left shortly after its acquisition to start Enter TV, a Cupertino, California-based start-up. Or as the top executive at a competing entertainment conglomerate put it: "They've got great early adopter copyrights."

Wall Street agrees, tagging Viacom as the dominant player in early 21st-century media. Of all the major entertainment companies, a recent report from Bear Stearns, a stockbroker, enthused, "Viacom will be in perhaps the best position to benefit from the coming interactive digital communications infrastructure." Indeed, Bear Stearns predicts that Viacom will outgrow its competitors, including Disney, Time Warner and News Corporation, by 10 per cent or more over the next few years. Given that Viacom's market value is edging towards \$30 billion (the Blockbuster and Paramount deals gave it an estimated

John Battelle is managing editor of *Wired* in the US.

\$18.4 billion boost in 1994 alone), that's serious growth. But as the next phase of the race begins, can it keep up the pace?

The Old New Media Company

Look at Viacom's record. In the past 10 years, while most of the media world served up more inane sitcoms, formulaic movies, and predictable newscasts, Viacom was making MTV into the most profitable network on the globe. It was branding kids from age 3 (Nickelodeon) to age 40 (VH-1). While the big three networks thrashed about, wondering why ad revenues were falling, Viacom was buying stakes in every hot media property in cable (see right). Now, as the kids who grew up with MTV and videogames enter their 20s, Viacom's investments are paying off.

Besides shedding its boring cable businesses, Viacom intends to fulfil Wall Street's expectations by creating products for the new media marketplace. To that end, a year ago Redstone and Biondi created Viacom Interactive Media, a division charged with exploring and re-creating brands for new forms of media. Viacom Interactive Media consists of two branches, Viacom New Media (CD-ROM and cartridge titles), formed two years before, and Viacom Interactive Services (online and interactive TV). The logical candidate to head that group was Ed Horowitz, a man universally applauded in the media business for his savvy, no-nonsense approach to creating entertainment products. "Ed has been in the new media business before, it just wasn't called that back then," points out Jeff Berg, chairman and CEO at International

Biondi has his magic black boxes in place, and they're platform-independent, standards-free, and work easily in all forms of media. They're called brands.

Creative Management in Beverly Hills. "He knows the value of electronic publishing."

Viacom has always been a new media company, and its key executives have constantly focused on how technology forces sea changes in business. "Back in 1987, I saw a vast technological and global revolution that would change the habits of people all over the world, and I saw Viacom at the centre of it," Chairman Sumner Redstone recently told *Time* magazine. Hiring the HBO team – Frank Biondi as helmsman and Ed Horowitz as navigator – may have been the smartest move he's made. They swung Viacom's tack directly into the winds of new media.

"Most of what we've done here really comes out of the partnership that Eddie and I have around technology, and what it means for the business environment," says Biondi, a broad and deep business thinker who can correlate the launch cost of a Galaxy One commercial satellite against the per-mile expense of installing fibre to the home. "Almost every step we've taken is a direct derivative of that attitude: *tracking* technology as opposed to *breaking* technology."

Since Horowitz and Biondi have been through the thickets of hardware-based business before, you won't find an albatross like Time Warner's Orlando trial hanging around Viacom's neck (nor will you find suspended orders for millions of set-top boxes, which several media companies now face). In fact, Viacom is selling its modest interactive trial in Castro Valley, California, along with the rest of its cable plant, to a partnership sponsored in part by TCI's John Malone.

"If you look at the media landscape," says Chris Dixon, analyst with

PaineWebber in New York, "Viacom is the only entertainment company that can take free capital and invest it back into content that is platform neutral – and take advantage of brands. At Time Warner any spare dollars are going into building out that cable plant."

The Viacom Heuristics

Created by CBS in 1971 when FCC rules mandated that broadcast networks divest themselves of all cable holdings, even Viacom's oddly onomatopoeic name is rooted in a pedestrian acronym: It's Vi-A-Com, for Video and Audio Communications. "The irony is how much it's actually lived up to that acronym," Biondi says.

Back in the '70s and early '80s, Viacom was anything but a content factory. It was, in fact, a plodding cable company that gradually acquired media properties – mostly television stations and cable systems at first. It also dabbled in network and cable television production (Nickelodeon, originally formed in 1979, is Viacom's most successful in-house brand). Most employees who can remember as far back as 1987 call the pre-Redstone company the "Old Viacom", a time when an institutional humidity kept the pace slow.

Today Viacom's corporate headquarters cover close to a million-square-feet of formidable Manhattan skyscraper at 1515 Broadway, in the heart of Times Square. While Viacom's tentacles reach to Florida (Blockbuster), Los Angeles (Paramount), Chicago (studios for Viacom New Media, which subsumed ICOM Simulations), and across the world, Viacom is centred here, in New York, where America takes its own cultural pulse. It is here that Tom Jones, Sheryl Crow and Snoop Doggy Dog come to pay tribute to MTV's cameras, often doing stand-ups from Viacom's 7th floor commissary, known as The Lodge.

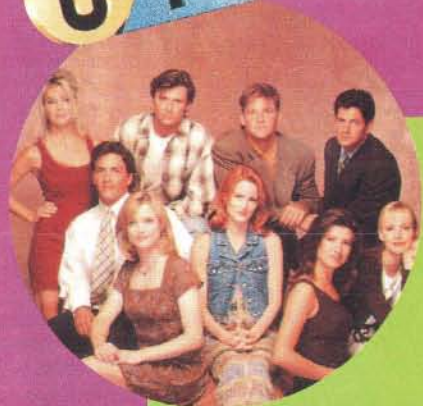
Twenty-one floors above, in richly carpeted offices more reminiscent of lawyers' offices than of a creative hotbed for America's youth, is what one media analyst calls "the single smartest group of executives under one roof." They are plotting the next phase of the media revolution. Below, in offices which define corporate hip (Viacom let MTV and Nickelodeon design their own workplaces, as long as they didn't spend more money than the corporate offices did), producers, writers and animators carry out that revolution.

Redstone's reign has been a time of heady growth. His 1987 arrival brought a shot of vigour to the company. It coincided with the ascendancy of a certain generation of kids who were used to alternating *Liquid Television* clips with Sega Genesis riffs, who had watched enough MTV to work at MTV, be on MTV, or simply appreciate MTV for what it is: *their* brand of television. As Biondi likes to point out, by 1993, MTV Networks generated more operating profit than the network operations of CBS, ABC and NBC combined.

Viacom's initial dabbings in new media were cautious: instead of shovelling whatever content Viacom had onto a CD-ROM, Viacom New Media president Michele DiLorenzo, a Nickelodeon and MTV veteran, opted to study the market for a year or so and allow products to develop organically from Viacom's business units. The first full slate of 12 titles hit the market in Christmas '94. Combined with products picked up in the Paramount deal, Viacom New Media is already in year two with 18 titles on the shelf, an impressive feat for any start-up. And much more is planned, as Viacom turns the lessons learned from making CD-ROMs into products that will eventually live on the Net and in your living room.

To focus on this task, Horowitz turned to Geoffrey Darby, a whiz-kid Nickelodeon programmer (he had left Viacom to become president of programming at the doomed Medical News Network), to lead Viacom Interactive Services. Darby, who returned to Viacom last August, was charged with divining the future of interactive services, be they based on the TV or the PC, and hitching that future to Viacom's businesses.

U P N



SHOWTIME

NICK
at
NITE



MEGASTORE

FILM/TELEVISION

Paramount Pictures
Paramount Home Video
Paramount Television (including *Star Trek*, *Frasier*, *Montel*)
MTV Networks (MTV, Nickelodeon, Nick at Nite, VH-1)
Showtime Networks Inc. (including Showtime, The Movie Channel, FLIX, SET, Showtime en Español)
Worldvision (Spelling, Tele-Uno)
TV group (11 stations)
Radio group (14 stations)

PUBLISHING

Simon & Schuster
(imprints include Scribners, Pocket Books, Macmillan Publishing USA, The Free Press, Silver Burdett Ginn, Prentice Hall)

Spelling Entertainment (78 percent)
United Paramount Network (joint venture between Paramount and United Chris Craft)
USA Network (50 percent)
All News Channel (50 percent)
Sci-Fi Channel (50 percent)
Comedy Central (50 percent)
Many other foreign television, publishing, and film entities as well as first-run syndications
Approximately 900 movie screens in the US and UK

NEW MEDIA

Viacom New Media
Viacom Interactive Services
Simon & Schuster Interactive
Computer Curriculum Corp
Virgin Interactive Entertainment (majority ownership)
Catapult (40 percent)
StarSight (26 percent)



SCI-FI
CHANNEL

NICKELODEON®

RETAIL/OUTLET

Blockbuster (video and music)
Paramount Parks
Virgin Megastores
Discovery Zone (49.9%)



20
DISCOVERY
NE



USA
NETWORK

Gee, two women with power
and only one bimbo!

Viacom Inc
What Doesn't It Own?

Darby, who like many of Viacom's executives gives off an air of professionally contained exuberance, called his new position "quite a sandbox to play in." After studying his market, Darby decided to close down Paramount's fabled Media Kitchen in Palo Alto, California and integrate its resources directly into each of Viacom's business units. Instead of running a separate R&D unit, Darby decided to create an internal consulting unit that supports company wide new product development. That way, the creator and holder of the brand (MTV, Nickelodeon, Paramount) would remain in control of the interactive product.

Such a move spurred a predictable backlash from some new media quarters – betrayal, muttered cynics, corporate abandonment of pure new media research! But Darby's decision was completely in line with one of several tangible business strategies employed at Viacom. Stare long enough, and some striking patterns of success begin to emerge from Viacom's seemingly inscrutable mass of brands.

Focus on the Brand

Darby's decision to fold interactivity into each business unit, rather than reinvent the wheel in a separate "interactive division", reflects one of several distinctive Viacom strategies. Strategy number one is to build the business around the brand, not the technology. "MTV is in the best position to figure out what interactive MTV will look like," Darby says. "The people who are closest to the creative product are the people who should do the work. There are a lot of creative people at MTV who know their audience. We should leverage those people's knowledge. Same for Star Trek, Nickelodeon – whatever."

The mission of Darby and DiLorenzo, in fact, is to weave interactive production methods and technology know-how directly into Viacom's existing brands and into the people who create and manage them. Each Viacom New Media title that is based on a brand, such as Nickelodeon's *Are You Afraid of the Dark* series, has several "borrowed" employees from the unit that supplied the brand. "We have the producers from the networks working on these experiences," DiLorenzo explains. "We get two benefits: We get a product in the short term that has greater integrity. In the long term, the networks are getting that learning."

Live the Duality

Strategy number two: the ability to chant a creative mantra to a bottom-line beat. Among 15 or so executives, not one varied in their commitment to two traditionally conflicting standards: first, that products must arise from creative passion, and second, that a product doesn't get made if the spreadsheets don't add up. "Everything that gets done here is going to eventually be a business," says Sueann Ambron, a former VP of Paramount's Media Kitchen who is now executive vice president of Viacom Interactive Services.

Making last year's top-selling *Beavis and Butt-head* videogame, for example, was a business no-brainer. But MTV's *Club Dead*, an experimental CD-ROM game created with the help of the media wizards at H-Gun Labs in Chicago, was much more of a creative risk (and the jury is still out on whether it was well received by the finicky MTV marketplace).

Both products reflect Viacom New Media's commitment to combining outside talent and in-house management to finish a product. "If you're an independent creative, there is usually a reason *why* you're an independent creative," explains DiLorenzo. "We're not about trying to *change* that mindset." Many artists and writers agree with DiLorenzo. Even the stuffy analysts, paid to find fault, sang in a unified chorus about Viacom's management of creative talent. "I can't find anyone who has anything bad to say about the management at Viacom," says

Keith Benjamin, a media analyst for Robertson Stephens & Co in San Francisco. "They seem to take a nurturing, hands-off approach to creative. That is extremely rare."

But there *are* folks willing to knock Viacom's creative management, both on and off the record. One author called Viacom the "stingiest company in the world. They look for nickels under the seat before sitting down for board meetings." Others see Viacom as distant and unappreciative of the creative challenges inherent to new media. Ian Verchere, a producer at Radical Entertainment in Vancouver, helped create Viacom New Media's Sega Genesis version of *Beavis and Butt-head* under a closely supervised licensing contract. "We were working with some very inexperienced people on Viacom's end," he said.

Culture of Intelligence

Viacom's strategy number three: develop smart people. Brands and creative talent mean little if the people who run them are out to lunch. Ask anyone in the entertainment business what makes Viacom work, and he or she will tick off the names of favourite executives. "In this business, smart, effective people are what's going to make the difference," says Neil Braun, a former Viacom executive who is now president of NBC Television Network. "There is incredible strength on Viacom's team."

These are executives steeped in media history, who have either studied it or lived it, depending on whom you talk to. Van Toffler,

When asked if he had seen prototypes of the Microsoft Network, Horowitz had an immediate answer. "I said to Bill, 'I like your vision, but there's only one problem. Microsoft owns it.'"

senior vice president for business development at MTV, is quick to point out that rock videos existed for 15 years before MTV wove them into the cultural fabric. Geoffrey Darby will remind you that the first cable TV system in the US came online in 1948, and that, 45 years later, only 60 per cent of households have cable. Ed Horowitz notes that no innovation in media has ever penetrated more than 25 per cent of households in less than 10 years. Anne Kreamer, an executive vice president at Nickelodeon, will tell you in no uncertain terms that the present school system is stuck in an industrial model that ignores the crucial learning skills for an information age: problem-solving, planning, and predicting, the "three Ps" upon which Nickelodeon has based its new preschool shows and products. And Frank Biondi will cut to the production and interface issues behind the supposed home-shopping bonanza.

Perhaps the most refreshing trait among Viacom's executives is their apparent mastery of the issues involved in making a real business out of new media: the nitty-gritty of actually delivering interactive services to your living room or den. Take Frank Biondi's verdict on home shopping: At Viacom those who know their markets, succeed. "Viacom has a very focused management team that has been seasoned by living through a leveraged buyout," says PaineWebber's Dixon. "In terms of budgets, they have tight discipline." Tight indeed. Ed Horowitz lays out how he looks at new media, which he calls "the nonlinear environment", with the precision of a business case: "When I look at the non-linear environment from the point of view of a content

Cyberspace Defined

With the proliferation of new media forms, you might wonder who'd want to write a definitive reference for the lingo. Any attempt to freeze new media technology's myriad meanings between covers seems doomed to automatic obsolescence. Undaunted, *The Cyberspace Lexicon* gives it a go. It's even a qualified success.

With a less-than-exhaustive collection of 800 terms, this handsomely produced and heavily illustrated dictionary can't begin to tell the whole story. What it does remarkably well, however, is provide concise definitions and graphic examples of complex terms and concepts that range from "structured query language (SQL)" to "virtual reality." A selection of short essays on heavy-hitting multimedia companies, products, and platforms rounds out the roster of definitions; but many of these are already showing signs of age — check out the ingenious take on troubled 3DO.



Your instant short-cut to speaking like a techno-jargon freak.

My first glance at the references yielded an entry for "walkthrough," but no mention of "fly-by" or "4D" — an influential multimedia authoring program. However, I found the book's extensive cross-referencing handy and well thought-out.

What gives the British-published *Lexicon* real oomph is its layout and design, with hundreds of striking full-colour reproductions. It follows authors Bob Cotton and Richard Oliver's groundbreaking *Understanding Hypermedia*, although the designer, digitally oriented Malcolm Garrett, has toned down the graphic excesses.

The result is miles ahead of the tawdry titles being rushed to market by US publishers; nothing else in print gives you such a good idea of multimedia's overall look and feel. — **Ken Coupland**

The Cyberspace Lexicon: An Illustrated Dictionary of Terms, from Multimedia to Virtual Reality. £19.99. Phaidon Press: +44 (0171) 361 1000, fax +44 (0171) 361 1010.

Cost-effective Coin-ops

Like me, you might have thought the most fun that could possibly be had with a TV was watching *Top Of The Pops* with Teletext subtitles. But you'd be wrong, because the complex thrills of arcade videogame hardware can now be yours for barely the price of a cacky old Mega Drive and subscription to *Coin Slot* magazine. The weekly trade newspaper of the arcade business, *Coin Slot* is a supplement to *World's Fair* magazine (a more general tome covering carnivals, market traders and the like), but can be subscribed to separately if you don't want to know which rides will be operating at this year's Kirby-in-Ashfield Civic Fayre.

The first half of the paper reads like any other trade mag, full of incomprehensible in-jokes, sinister features about how unlikely you are to win from fruit machines and gibbering nonsense from crusty old seaside arcade owners bemoaning the downturn in profits from their *What The Butler Saw* machines. But reach the ads at the back and you're in a shady inner-city arcade of the mind, with only the distinctive smell of adolescents smoking glue missing from the total picture of urban decay. Why? Because there are loads of second-hand video games for sale.

This isn't just a nostalgia trip. If a complete vintage *Gauntlet* machine for £75, or a *Rolling Thunder* for £125, or even a full-size sit-down *Space*



Forget "arcade-perfect" games conversions on the PC. This is the real thing.

Harrier complete with hydraulic chair for £250 doesn't light up your 1-Player Start button, why not fork out £1100 and get a spanking new *Mortal Kombat 2* PCB instead?

You see, almost all video games made since 1981 comply with the JAMMA standard. What this means is that if you buy the simple box of tricks known as a Supergun, you can then buy the Printed Circuit Board (PCB) of almost any video game, plug it into it, and play. Not a lot of people know about the Supergun yet, but they're becoming more popular — you can get a good one, complete with game controller and all the cables to plug into a domestic SCART TV for less than £100.

With PCBs costing from as little as £10-40 for vintage (and not-so-vintage) coin-ops like *Mr Do*, *Sky Kid*, *Shadow Dancer* or *Time Pilot*, right up to £1000 and above for brand-new state-of-the-art jobs like *MK2*, you can easily build up an impressive arcade in your home even if you don't have room for a load of bulky machines. — **Stuart Campbell**

Coin Slot: 60p/issue or £49/yearly subscription. From most good newsagents or *World's Fair* Publications: +44 (0161) 624 3687, fax +44 (0161) 665 1260. Supergun: around £100. Datel Electronics: +44 (01782) 744 707, fax +44 (01782) 774 292. *Top Of The Pops*: BBC1, 7pm every Thursday. Subtitles: Ceefax p888.



Tomorrow's Print News Today

Chew on This

Take the Japanese equivalent of the Nolan Sisters, give them guns, body armour, and hot motorbikes, put them in a *Bladerunner* cityscape, and you get The Knight Sabers, crime-busting popsters from the anime video *Bubblegum Crisis*. The series centres around Priss, a singer, and her pals. When they're not being pop stars, cops or aerobics instructors they're superheroes.

If you crave a little more interaction, the *Bubblegum Crisis* CD-ROM is a screen



Girls, guns, and guitars.

saver loaded with more than 100 sound and video clips. A video jukebox also offers a Knight Sabers concert video, Hurricane Live 2032. If you want to rock out or watch stuff blow up, you'll find that *Bubblegum Crisis* has it all.

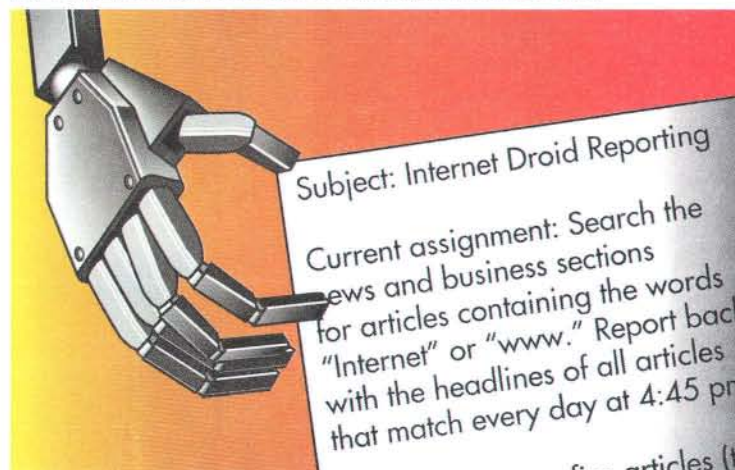
— Richard Kadrey

Bubblegum Crisis: The Screen Saver, for Mac and Windows: £30.99; Videos £12.99; Laserdisc £32.99. Anime Projects: +44 (01248) 370 044, fax +44 (01248) 370 046, e-mail 00021.3131@compuserve.com.

Today's newspaper is actually yesterday's news. So for those stories you have to know about as they happen, Farcast Inc, of Menlo Park, California, has developed a news and information service (called Farcast) that automatically sends you what you want, when you want it, straight to your Internet e-mail account.

Farcast allows you to set up customised agents (called "Droids") which scan various news feeds, including AP, UPI, Businesswire, and PR Newswire. Each Droid can search through the feeds looking for certain words or word combinations — including advanced Booleans like "Apple Computer but not Microsoft." You can specify whether you want stories sent to you as they break, or in a batch at certain times of the day.

If you'd rather browse broader topics, Farcast can send you headlines by category, (say national or international news), or by industry, like telecommunications or entertainment. You can then get the full text of any story by firing off a simple e-mail request to the service.



Your own personal robot news-gathering service — the Farcast is good.

Farcast also carries a comprehensive stock-quote feed from the New York, American, and Nasdaq exchanges, plus information on certain US mutual funds and leading market indicators. Droids can send portfolio updates throughout the day, or supply individual price quotes as you need them.

Farcast is available for a reasonable flat rate, and there's no per-story or per-Droid charges. Subscription plans for six months or more are available, which brings the cost to under US\$50 a month. If you're still unsure, a special seven-day trial is available for \$9.95.

Agent software isn't smart enough to replace editors yet, but for important news-breaking topics, Farcast is a great way to stay up-to-date in a wired world. — Andrew Anker

Farcast: suggested price US\$39.95 per month, although reductions are available for longer subscriptions. A 7-day trial costs \$9.95 (one per customer). Farcast Inc: +1 (415) 327 2446, fax +1 (415) 327 5603, e-mail info@farcast.com with *hello* in the subject line, or for a demonstration, e-mail demo@farcast.com, subject: *start*.

Juke Box Jury

Mad engineers are (luckily) even rarer than mad scientists, but I knew one back in the 1930s and he made a very profound remark which I've never forgotten: "No machine shall contain any moving parts."

We haven't quite reached that stage in computers, although we're rapidly heading for it with solid-state devices. Meanwhile, the CD-ROM is the best storage system we have — but with a single drive, it's a damn nuisance switching caddies. Because any ecological niche in the computer field is quickly filled, I knew there must be the equivalent of the Juke Box for CD-ROMs.

Well, it didn't take long to discover the Pioneer high-speed CD-ROM Minichanger with its six-pack magazine. I now have two of these — each appears as six logical devices, so I can switch between 12 CD-



Six CD-ROMs, about four gigabytes, quad speed. Do the math.

ROMs in a matter of seconds. The removable magazines also serve as useful storage for CD-ROMs when they aren't being used.

The unit itself is rather bulky (about half the size of the computer), but it's such a convenience that I can't imagine life without it.

I have one magazine for the *OED*, *Shakespeare*, *The Bible*, the Durants' *Story of Civilisation*, the marvellous 1750-title *Library of the Future*, and *Encarta '95*. The other contains astronomical programs like *Virtual Reality's VistaPro*, *Mars Explorer*, *Venus Explorer*, *The Sky For Windows*, and *Red Shift*. This little lot is enough to keep me busy until 2010.

— Arthur C Clarke

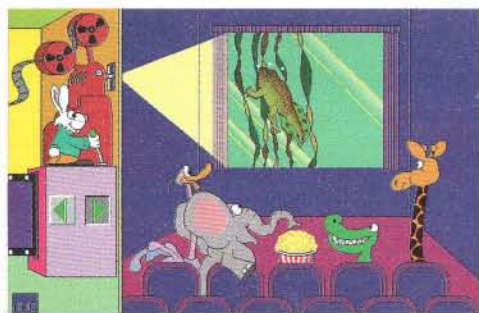
Pioneer High Speed CD-ROM Minichanger DRM-604x: £1,280. Compatible with: DOS, Macintosh, OS/2, and Windows. Pioneer: +44 (01753) 789 789, fax +44 (01753) 789 537.

Taught by the Animals

First there was Millie, a calculating cow. Then Bailey, a baseball-capped feline who dabbled in literature. Both transcended their low, relatively humble positions on the food chain to host entertaining yet subversively enriching multimedia software programs for young kids — *Millie's Math House* and *Bailey's Book House*.

Now there's Sammy, a presumably venom-free snake who presides over *Sammy's Science House* by Edmark. This accommodating reptile promises pint-sized epiphanies on such natural phenomena as the order of things, the wonders of nature, weather, and biological taxonomy.

Music plays cheerfully while an array of activities await junior mouse-jockeys. All of them are engaging, some more than others. Highest on the scale is the "workshop" where budding handy-people can learn to follow a blueprint while constructing various projects. Also very hands-on is



It's time for the kids to get scientific over in the reptile house.

the make-a-movie component — a pre-school version of film editing. Then there is "Acorn Pond," a virtual field trip to a pond in Minnesota, where a rather stern voice identifies wildlife. You can also tinker with a "weather machine" but the possibilities are limited to three variables — there are no tornadoes or even thunderstorms. Finally, there's a feature that encourages junior biologists to identify traits in the animal world.

Edmark promises that spending time in Sammy's house "gives kids the start they need to develop a positive attitude toward science and a curiosity about the world." In my observation, most kids already have that curiosity. The nice thing about *Sammy's Science House* is that it doesn't kill the urge, but nurtures it. — **Steven Levy**

Sammy's Science House, for Mac and PC, CD-ROM or diskette: around £30. Principal Distribution: +44 (01706) 830 000, fax +44 (01706) 832 568.

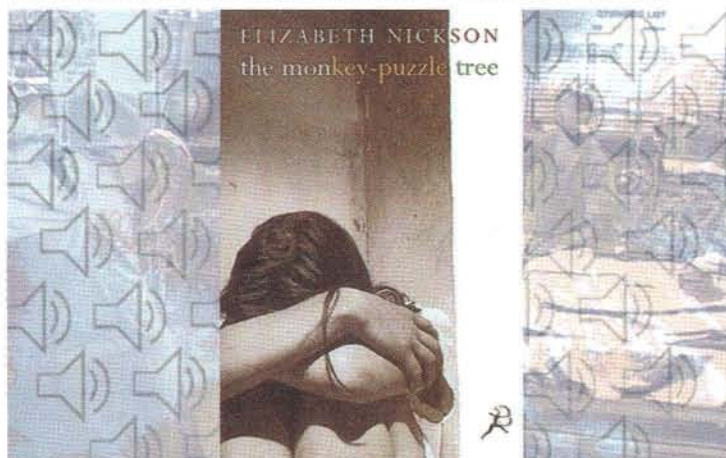
Peace of Mind

Before this book, I'd read a lot of horror stories — but I'd never encountered anything as disturbing as "The Grid Room", where psychiatric patients endure massive doses of LSD, sleep deprivation, anti-schizophrenia drugs and electroshock therapy. Observers judge the time of day when patients display the most energy, then they assault them with more drugs in order to break them completely.

Then there's "The Sleep Room", where chemically paralysed subjects lie for weeks, unable to escape from looped messages playing on tape recorders strapped to their heads. The aim of this procedure (known as "psychic driving") is to erase each patient's existing personality, then replace it with a new set of traits and instructions.

Impressive feats of imagination for a first-time novelist, you may think. But the real-life author of these appalling experiments was, of course, the CIA. During the 1950s and 1960s, their MKULTRA research programme subjected hundreds of unwitting American and Canadian citizens to these and other mistreatments, in an attempt to replicate the "mind control" techniques then being used by the Eastern bloc.

Elizabeth Nickson's fictionalised (and semi-autobiographical) description of these events is chiefly remarkable for what it's not. It's not a



The CIA's botched mind-control experiments left some horrifying scars.

thriller — there is no sense that any of the patients can be "rescued" from the tortures perpetrated 30 or 40 years ago. Nor is it a courtroom drama, although the victims' struggle to gain compensation and recognition from the CIA gradually reveals the details of their ordeal.

Instead, what unfolds is MKULTRA's predictably debilitating effect on the lives of its subjects. The main character, confused by childhood memories of her parents' erratic behaviour, isn't particularly comforted by the revelation that her mother withstood many of these horrifying experiments while being "treated" for mild post-natal depression.

In this everyday family context, complete with genuine testimonials from MKULTRA witnesses, and the CIA's defence that their studies "while extreme, weren't outside the generally accepted procedures of the time", *The Monkey Puzzle Tree* is more touching, more frightening and oddly more convincing than any factual conspiracy-theory account ever could be. Most worrying of all is the thought that the book only documents the brainwashing experiments that failed. It's going to be much harder finding out about any that succeeded. — **Dave Green**

The Monkey Puzzle Tree, by Elizabeth Nickson: £15.99 (hb), £5.99 (pb out in June '95). Bloomsbury Publishing: +44 (0171) 494 2111, fax +44 (0171) 434 0151.

Sign of the Times

Signature Software takes your handwriting, cursive or print, and turns it into a font that works with every word processor and desktop publishing or drawing program. Signature Software's program, *WriteType*, even works with spreadsheets.

The problem is, few people have handwriting that's worth preserving for posterity. Signature Software tries to help by putting lots of blue guidance lines on the signature form that you fill out and send to them for scanning. Signature will also allow you to rewrite up to 26 of the letters and symbols for free; other corrections are



The old-fashioned way.

available for a small charge.

My signature font looks like my handwriting in primary school: precisely positioned, carefully connected, and uniformly uninteresting. People with artistic handwriting should have much better results.

Signature also offers two packages of great-looking handwritten typefaces: PenPals (printed fonts), and SuperScripts (cursive ones). — **Simon L. Garfinkel**

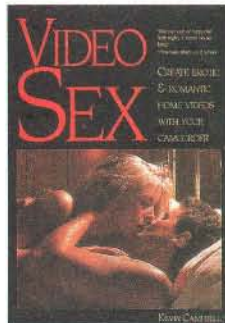
WriteType, for Mac and Windows: £249.95; PenFont: £41.95; PenPals: £19.95; SuperScripts: £29.95. Creative Solutions: +44 (01276) 27078, fax +44 (01276) 682079.



Tapping in Again

Candid Camera

Any budding Jeff Strykers, Sarah Youngs or Rob Lowes out there would do well to check out *Video Sex*, a 200-page guide on how to produce and star in your very own erotic movie. Kevin Campbell's book has just the mix of soft porn and hardcore technical assistance that so many of today's reference manuals lack. There are sections on massage, masturbation, light bondage, spanking, and, for the really adventurous, out-of-sequence editing and advanced audio dubbing.



Hummm. Here's how.

Oddly, it's illustrated with straight black and white photos, rather than the far sexier QuickTime grabs, although one image of a couple making love lit only by the rays of an office photocopier will stick with me for a while. It sounds great fun, though I still don't think this is enough to make me actually buy a camcorder: I guess I'll have to try it outside Dixons. — Kevin Cecil

Video Sex, by Kevin Campbell: £13.99. Available in UK from Tower Records Mail Order: +44 (0171) 287 1510.

Since its release in 1984, the spoof "rockumentary" *This Is Spinal Tap* has become a cult classic. Its strangely twisted fiction has even crossed over into real life – the actors have gone on tour as Spinal Tap, they have released two albums (the charmingly titled *Smell The Glove* and *Break Like The Wind*), and heavy-metal bands cover Tap originals like "Big Bottom" and "Hell Hole."

Now the feature film that inspired these events is on CD-ROM, along with a host of extras. As the QuickTime film plays on screen, you can switch between the original soundtrack and two running commentaries, one by the *Spinal Tap* actors; the other by director Rob Reiner and various members of the production crew. These are funny people, and their stories offer an entertaining look at how this unique film was created. Fans will finally discover why band members get herpes sores on their lips, why their amps go to 11, and why they have to perform as Spinal Tap at least once every three years.

The disc offers several ways to get to your favourite film moments, including hyperlinked tour maps, snapshots from key scenes, and lists of songs and scenes. Key-word searches ("dust for vomit" or "armadillos in



Classic quotes, clips and out-takes on the essential CD "ROM-umentary".

our trousers") take you to the exact point that you're looking for.

A second disc contains scenes that didn't make the final cut – promotional clips, editing-room score cards and script-margin scribbles. Also tossed in are a couple of short films that turn out to be as funny as the main feature – especially the "Danish Cheese-Rolling Festival" promo.

Watching this intimate view of movie-making, you feel included in one hell of a fun club. Some of the most amusing segments show how the filmmakers struggled to retain dramatic structure in a largely improvised film. Everyone involved seems to remember the process very rosily, so much so, in fact, that the commentaries sometimes stray into mutual back-patting. Just how interesting you find browsing the anecdotes collected here depends on how hooked you are on this particular movie.

Spinal Tap's secret is in its delicate balance. It treats the ludicrous spectacle of rock stardom not only with devastating wit, but with great affection as well. It cuts close enough to reality to be the fave film of many rock stars. For any fan, this is a collector's item. — Jim Gasperini

This is Spinal Tap, for Mac: around £30. Kimtec: +44 (01202) 888 873, fax +44 (01202) 888 863. Softline: +44 (0181) 401 1234, fax +44 (0181) 401 1235.

Dr Who — Straight to Video

When the BBC killed *Doctor Who* in 1989, the nation shed a tear. Rumours of a new series have abounded ever since, but in the meantime, the Doctor has been skilfully regenerated — by his dedicated fans.

It started with semi-professional video releases: stories in the *Doctor Who* tradition using actors from the original TV show. Anyone can recognise the characters of the Doctor and his assistants here, but to avoid infringing BBC copyrights, they are never mentioned by name — the lead is always referred to as "The Stranger".

Now the BBC has licensed not the *Doctor Who* characters, but some of his reasonably better-known adversaries — the Sontarans. The result is *Shakedown*, a 60-minute sell-through thriller made for £25,000 by a production team and



The Sontarans — the ones that weren't Daleks or Cybermen.

actors culled largely from the world of *Doctor Who* (didn't any of them get jobs when the series finally folded?).

The costumes and effects are great, but in every other department, the video suffers. The plot's got more holes than a party pack of Polos; the script is leaden (the producers were doubtless too scared to alter a word of a script by *Doctor Who* god Terrance Dicks); the cast get killed in reverse order of acting ability, but even the ones left at the end suck; and the Sontaran second-in-command appears to be voiced by those responsible for Douglas Hurd's *Spitting Image* puppet.

All in all, a perfect recreation of everything that *Doctor Who* ever was. Brilliant. — Andy Bodle

Shakedown — Return of the Sontarans: £16.99. DreamWatch Video: PO Box 1015, Brighton, BN2 2YU.

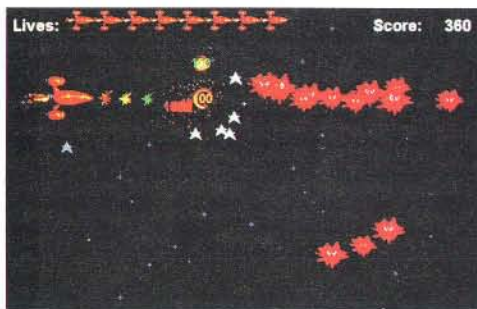
Write a Game in an Afternoon

I've been graced with the coding skills of an amoeba: still, I've been turning half-baked schemes into crappy games since my adolescence, thanks to such classic programs as *Adventure Construction Set* or *Shoot-'Em-Up Construction Kit*. Now comes *Klik & Play*, which uses the Windows interface to make creating games (almost) as easy as point-and-click.

Developed by Europress Software — the same folks who produced the AMOS game creator for the Commodore Amiga — *Klik & Play* is a programming language without the programming. Every aspect of *Klik & Play* is controlled by mouse clicks and menu commands: scaling and rotating graphics, adding sound effects to game events, and so on.

Klik & Play's remarkable step-through editor mode even lets you test play part of a game before it's done. Completed *Klik & Play* games can then be compiled into stand-alone files to be distributed across the biosphere.

Klik & Play includes a healthy supply of graphics,



Sega and Nintendo are quaking in their boots, no doubt.

music, and sound effects for you to tap into, along with nearly a dozen *Klik & Play*-created games. (The CD version has more of everything, including 20 *Klik & Play* games to dissect.) Best of all, *Klik & Play* lets you rip off — er, import — a variety of graphics and music files, including .PCX (graphics), .FLC (3-D animations), .MID (General MIDI), and .WAV (sound samples).

Keep in mind that *Klik & Play* won't let you write the next *Doom*, *Myst*, or *Super Mario Bros*. It's simply not powerful enough to create games of this level of sophistication — games that are more than just variations on a theme. But you will be able to create shareware-quality products relatively easily, and that's probably enough to satisfy most people — the younger games players of the household, say.

It certainly satisfies me — I'm already hard at work on *Klik & Play* versions of my favourite Atari VCS-2600 games. — *Zach Meston*

Klik & Play for Windows: £39.99 floppy, £44.99 CD-ROM.
Europress: +44 (01625) 859333, fax +44 (01625) 859759.

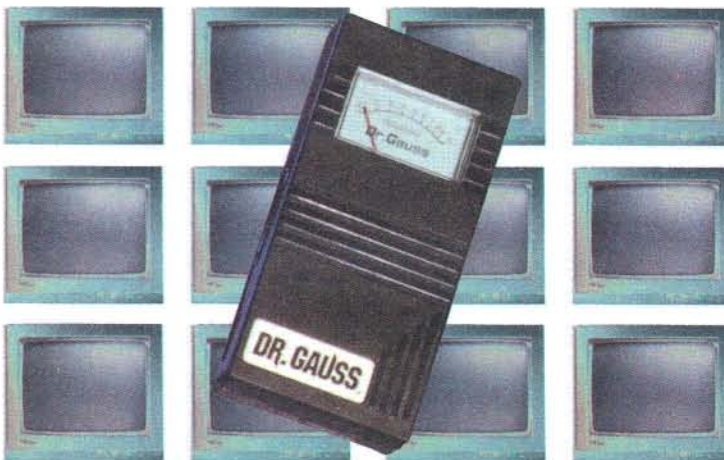
Watching the Detective

In my preparation for the modern urban adventure, I take one last look at my list of provisions: credit cards, A-Z, Kendal Mint Cake, Dr. Gauss, condoms... Dr. Gauss?

Dr. Gauss is not a B-movie villain or an oriental soft drink. It's "The EMF Detective," an indispensable tool for potential victims of electromagnetic fields. Dr. Gauss has the heart of a divining rod, the brain of a Geiger counter, and the body of a garage door opener — it sniffs out EMFs and squawks like a canary when it hits 'em.

Remember those enticing electromagnetic wave diagrams from your high-school physics textbook? Where ripples of positive and negative energy radiated from either end of a simple, copper-wrapped motor? Well, it turns out that people who have prolonged exposure to high levels of EMFs may have a high incidence of cancer. Studies have been inconclusive, but why take chances?

Many of today's video monitors spit out high levels of these ripples. A



Dr. Gauss' observations from the EMF band can be "unbelievable".

foot from my NEC MultiSync 3-D monitor, I get a reading between 2 and 3 Milligauss — a level some scientists consider dangerous.

These waves seep out of everything that has a current running through it. The electrical transformers outside my building, for example, amped out the unit at 10 Milligauss-plus from 20 feet away. I set Dr. Gauss down next to a coffee grinder, pushed the button to pulverise, and practically broke the needle in two.

You won't be able to carry Dr. Gauss with you everywhere — it emits a piercing scream when you hit an electromagnetic mother lode. Salespeople won't take much of a liking to you if it goes off in your local branch of Radio Shack. And I don't advise pointing it at ATMs, buses, and other people's cars: you may be mistaken for a terrorist.

Once you get Gaussed, you'll likely be hooked. In this day and age, Dr. Gauss is too valuable to be left at home. — *Richard Overton*

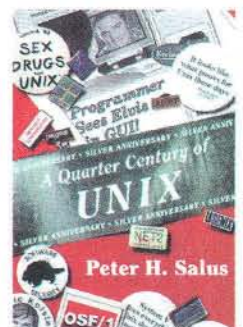
Dr. Gauss: £39.80. Life Energy Products: +44 (0171) 231 6705, fax +44 (0171) 252 1130.

A History for Wireheads

Unix has affected just about every computer now being used. DOS's few good features come from Unix; the C programming language was invented for it; and the Internet owes much to the advent of low-cost, multiuser Unix workstations.

A Quarter Century of Unix (written by an unrepentant Unix aficionado) details its conception at Bell Labs, its gestation within the academic research community, and its eventual release into the commercial arena.

Along the way, you'll pick up fistfuls of Unix lore, gossip, and a few backstage glimpses at the people who made Unix one of the most



Unix, the first 25 years.

successful digital viruses in the history of computing.

There are a few holes in the history. You find out all about the first Unix work-station — the Z8000-based Onyx with an 8-inch, 20-Mbyte hard disk, but little about Onyx's founder, Bob Marsh. On the other hand, you will learn that the very first edition of Unix came with a Basic interpreter, a program for generating form letters, and a command for hanging up the typewriter. Useful features, those. — *Simson L. Garfinkel*

A Quarter Century of Unix, by Peter Salus: £19.95. Addison-Wesley: +44 (01734) 794 000, fax +44 (01734) 794035.



Valuable Time

Recently, I inherited a wind-up pocket watch. Tiny and well-made, it keeps impeccable time. I dimly recognised its *marque*, Jaeger-LeCoultre, as one of distinction in clockmaking. (I have always coveted its Atmos, a clock as close to a perpetual-motion machine as any designed: it is powered by changes in the ambient temperature.) So what were Jaeger *et al* up to these days?

The company turns out to have a much wider range of timepieces than I imagined. (Like, 200 of them.) Or than I could afford. (Their top-of-the-line Reverso Repetition Minutes sells for US\$65,000.) A philistine can get a



Not for everyday use?

Jaeger-LeCoultre for a grand, but the real joy in owning one is in the craftsmanship that goes into the few hundred mechanical parts. Many are self-winding (*automatique*, as they say), using a ratcheted weight that responds to the motion of your wrist.

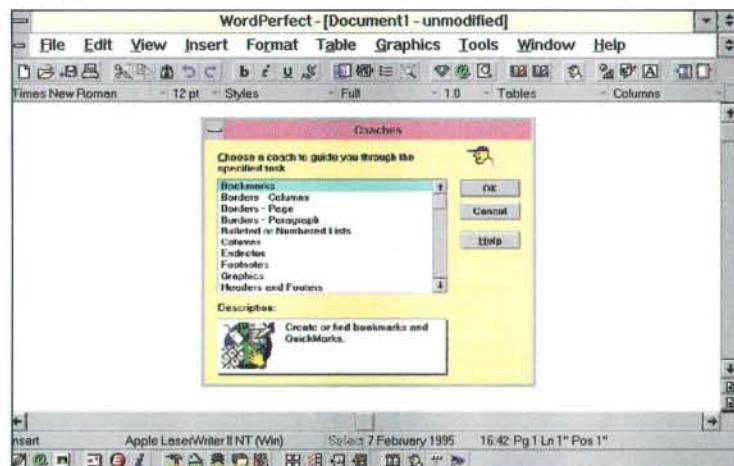
What's sad is that a cheap electronic Timex keeps time as well as the very best watches humanity can craft. That almost makes me wonder if I shouldn't keep my new watch in the nearest safe-deposit box. Well, almost. — *Jef Raskin*

Jaeger-LeCoultre: Watches from about £1,000 to £50,000; Atmos: £3,000. Harrods: +44 (0171) 730 1234.

The Tao of WP6.1

As a rule, software designers tend to be in the same class as the *Smash Hits* layout posse when it comes to visual presentation. They've got pixels and they know how to use them. It matters. If you spend up to twelve hours a day in the company of a word processor it matters a lot. Too many garish prompts and hints on your screen, and you feel churlish if you don't start everything with a big, big, "Hi!!".

About five years ago, I was in a friend's office when a screen caught my eye — blank, clean and as blue and inviting as the Caribbean Sea. I'd flirted with several packages up to this point, but that first meeting with WordPerfect 5.1 was love at first sight. It had the elusive quality all other packages lacked; the quality that made my gonads bristle. It had elegance. It seemed that all the muscle in the world was concealed behind that crystal blue screen. This was Zen word processing. Masuoka Shiki could have written haikus at a screen like this. Such was the depth of my feeling, it never even occurred to me to pirate. I paid the full price of



WordPerfect is now packed with icons. But you can customise them away...

bliss, never complained, and remained doggedly faithful. Mr Gates tried to tempt me with his Windows, but I wouldn't leave my little wooden environment for anybody. I am a man, not a mouse.

It was the CD-ROM, with its insatiable demands for more power and a fancier chip, that broke us up. 5.1 suddenly seemed fusty. In an attempt to alleviate the heartbreak, the WordPerfect people, now known as Novell, sent me a copy of their brand spanking new 6.1. I installed.

There was a hatchet-faced little man in the corner called Coach. I hated him on sight. The screen was cluttered with paste-pots and hammers. I tried to write something. "Hi!!" I wrote, and again, "Hi!!".

WordPerfect was always infinite in its customisation. Now the paste-pots, and Coach, have gone. The blue is back — paler and more evanescent still. "The Way," Seng t'san wrote "is perfect like unto a vast space, with nothing wanting, nothing superfluous." — *David Stafford*

WordPerfect 6.1 for Windows: £280. WordPerfect UK: +44 (0800) 177 277.

Record Your Message Here

Voice Organizer is a palm-sized device that records voice messages and plays them back either at a verbal command or at preset times. I know it sounds hokey, but I and 15 friends and colleagues are completely addicted. At £149.99, Voice Organizer is cheap for the use I get out of it.

Voice Organizer comes with 512 Kbytes of memory, which holds up to 240 seconds of voice recordings. You can buy an additional 512 Kbyte memory upgrade for £39.95.

I use the basic scratch-pad buffer to record daily to-do lists. Voice Organizer is also handily programmed to remind me to change the network backup tape every Friday at 4 pm.

The most convenient feature, however, is a telephone directory. Speak a person's name, and his or her number comes up on the device's 1-by-2.5-inch LCD along with any pre-recorded notes you may have made.

The only thing I find practically useless is the calculator: I can't program it to compute equity index options. Your mileage may vary.



Better and cheaper than a Newton — and you can talk to it.

About a month ago, I lost my Voice Organizer while travelling. I ordered a new one immediately upon arriving home in Zurich, but was completely helpless during the three days it took to have a new one shipped from the States. If I lost my Newton, I'd wait until the next generation came out, then maybe replace it.

On the downside, the sound quality of the Voice Organizer is usable, but not crystal clear. You'll also need to invest in rechargeable batteries if you're going to make heavy use of it, although there is a warning when the power is running low. This cuts down the chances of losing the data that you've entered into the system.

Just for fun, I trained my Voice Organizer in Japanese. (It can handle any language.) It seemed to work even better than it had in English, but I felt like a real show-off, so I switched it back. — *Farmer Person*

Voice Organizer: £149.99. 512 Kbyte additional memory card: £39.95. Voice Powered Technology International Inc.: +44 (01753) 577 498, fax +44 (01753) 511 947.

Three ways to subscribe:

1 mail
Fill out and post this card

2 e-mail
subscribe@wired.co.uk

3 call
01424 758 300

{ to pay by Connect, Delta,
Switch or credit card. }

GET ME WIRED

☐ **I want to get Wired** – reliably and regularly. Begin my subscription immediately, if not sooner at the discount annual subscription rate:

Individual subscriber

☐ UK (£37.80)

☐ Europe (£44.00)

☐ Rest of the world (£50.00)

Foreign subscriptions payable by credit card or by cheque through UK banks only.

Name

Address

Postcode

Country

Telephone

Fax

E-mail address

(Very important. This is by far the most efficient way to communicate with you about the magazine, periodic special offers and your subscription.)

Payment method

Wired – please save trees by charging my bank account/credit card each year at the discount annual subscription rate (currently £37.80 in the UK – see above) unless I cancel. I want to pay by:

☐ Direct debit ☐ Visa ☐ Access ☐ AmEx ☐ Delta ☐ Connect

Account / Card number

Expiry date
(Credit Cards only)

Sort Code
(Direct Debit only)

Signature

Date

Bank/Building Society name and address (Direct Debit only)

Instructions to Bank/Building Society

I instruct you to pay direct debits from my account at the request of Wired UK. I understand that the amounts are variable and may be debited on various dates. The amounts and due dates will change only after Wired UK has given me prior notice. I will inform the bank in writing if I wish to cancel this instruction. I understand that if any direct debits is paid which breaks the terms of this instruction the bank/building society will make a refund.

Tired – please mail me every ten minutes to remind me to renew my subscription.

☐ I enclose a cheque/postal order for £37.80 made payable to Wired.

It helps Wired to be able to rent our address list. We do so only to mailers that we feel are relevant to our readers' interests. To remove your name from the rental list, please tick here.

BI4959101

GET MY BUSINESS WIRED

☐ **I want to get my organisation Wired** – please start my subscription with the next available issue and continue my order unless I cancel. I realise I need send no money now as you will bill us later at the corporate rate. Please send me:

	UK	Europe	Rest of the world
Single Wired: one copy every month	<input type="checkbox"/> £42	<input type="checkbox"/> £49	<input type="checkbox"/> £56
Triple-Wired: three copies every month for the price of two. I hope this bargain offer will stop people stealing the magazine from my desk.	<input type="checkbox"/> £84	<input type="checkbox"/> £98	<input type="checkbox"/> £112

Signature

Date

Name

Job Title

Company Name

Address

Postcode

Country

Telephone

Fax

E-mail address

(Very important. This is by far the most efficient way to communicate with you about the magazine, periodic special offers and your subscription.)

It helps Wired to be able to rent our address list. We do so only to mailers that we feel are relevant to our readers' interests. To remove your name from the rental list, please tick here.

BI4959201

WIRED

Freepost TN 7268
PO Box 101
Hastings
TN35 4BR
UK

No stamp
required if
posted in
the UK

Please fold along this line.

Get Wired.

Please tape closed (no staples)

WIRED

Freepost TN 7268
PO Box 101
Hastings
TN35 4BR
UK

No stamp
required if
posted in
the UK

Please fold along this line.

Don't be the last
to know.

Please tape closed (no staples)

Three ways to subscribe:

1_{mail}
Fill out and post this card

2_{e-mail}
subscribe@wired.co.uk

3_{call}
01424 758 300

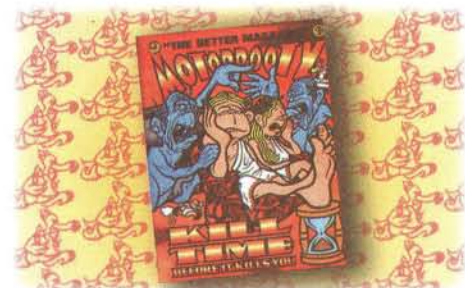
{ to pay by Connect, Delta,
Switch or credit card. }

The Alternative "Alternative"

You're young, you go to Reading every year, you think Sub Pop is an underground label, you crave the next Courtney exclusive, you testily quote Rollins at ex-girlfriends who tell you to cut back on the caffeine. *Motorbooty* is not for you.

On the other hand, if you have a healthy disrespect for rock stars, and the only parts of the music papers you bother with are the scatter-gun attempts at satire towards the back, the Detroit-based fanzine will be the best thing to happen since it all got too much for Mr Love.

Edited by members of unhinged funk band Big Chief, *Motorbooty* operates under the honourable doctrine, "Indie rock must die"; sharply written, wonderfully illustrated, border-line litigious, it is to America's rock scene what *Spy* is to that country's political arena. The seventh issue's centrepiece is a 12-page destruction of rock literature that's as



Boot up your life with the cutting critiques of *Motorbooty*.

exhaustively researched as it is brutal. Special mention should go to a tampered-with version of the Henry Rollins "What's on your PowerBook?" ad, adding "500 more reasons why my dad should've got his ass kicked" and "Whoa Is Me, a book in progress" to the big guy's hard-drive.

While some of the comic strips and "straight" interviews (shoved to the back, funnily enough) fail to keep the momentum going, *Motorbooty* is still the source of some of the most incisive music criticism around, and probably the only place that you'll find the Breeders described as "Twice as good as the Pixies, with only half the fat!"

— Ross Jones

Motorbooty: \$3.50/issue (published "intermittently"), four-issue subscriptions from \$14 ("except for persons at foreign addresses, who must pay considerably more"). *Motorbooty* Worldwide Communications: PO Box 02007, Detroit, MI 48202, USA.

Haunting Residents

With two discs released and a third on the way, The Residents is both the most prolific band experimenting with interactive music on CD-ROM and one of the most interesting. The band's latest release, *The Gingerbread Man* is an "expanded audio" disc, featuring 11 new songs; it's playable in both CD-ROM drives and ordinary CD players. The interactive elements are amusing but fairly limited.

Like The Residents's first interactive effort, *Freak Show*, this new one is structured around profiles of strange, alienated characters. Nine tormented souls, such as The Confused Transsexual and The Sold-Out Artist, are found lurking behind an abstract interface of twitching eye icons. A former star, who now spends his days watching TV alone, The Ageing Musician wonders, "Maybe if I put a bullet through my brain/They'll remember me like Kurt Cobain."

The disc's unifying thread is a running gingerbread man, who appears in recurring animated montages. The famous uncatchable children's book character symbolises the elusiveness of human happiness.

Each video-song begins and ends with non-interactive sequences of QuickTime movies and graphics. For a few minutes in the middle, you can manipulate the graphics and audio, using the keyboard to create sur-



Never mind the interactive elements — here are the new Residents tunes.

real collages. Hitting certain keys can swap complex tiled backgrounds on the screen, send pithy strings of text and weird graphics wandering about the display, and add audio snippets of characters bitterly mumbling about their wasted lives. If you choose not to interact, these highly amusing effects alternate randomly.

Frustratingly, it's not always clear whether or not you're in an interactive mode. A flashing cursor on screen is usually a sign, but sometimes this cursor is busy morphing into The Residents' trademark eyeball and top-hat images, and clicking doesn't help. Consequently, you spend too much time trying to figure out the interface to enjoy this fully.

Some key information can be found in the manual, but only after ploughing through several pages of pretentious nonsense coyly belabouring the band members' anonymity.

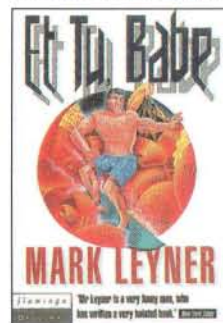
After a while, the graphics become mostly a distraction, and interacting with them a chore. Fortunately, once you get tired of playing collage artist you can put the disc in your audio player. *Gingerbread Man* is the most approachable and haunting music from the Residents in years. — Jim Gasperini

The Gingerbread Man: £39.99. BMG Interactive: +44 (0171) 384 7803, fax +44 (0171) 304 4045.

Gen-X Johnson

In the future, all books will be written by Mark Leyner, and all books already written will wish they had been. *Et Tu, Babe* is the literary equivalent of Jolt Cola; if it was a record it would consist entirely of samples — of records that consist entirely of samples.

Everything Leyner writes is primary fiction. 1983's *I Smell Esther Williams* reads like the screeching sound you get when you drag a balloon down a baby's face, while *My Cousin, My Gastroenterologist* (1990) has the power of a gang of angry lorries. But *Et Tu, Babe* is his masterpiece; it is nuclear, it is



Megalomania a-go-go.

a huge thing that shines.

It tells the story of "Mark Leyner's" burgeoning megalomania, his amazingly intense experiences and the personal qualities that make him the cult author he is.

There are massive stylistic digressions, and negligible plot. But *Et Tu, Babe* is a *Life of Doctor Johnson* for the 1990s — if you accept the Doctor as an insane, testosterone-fuelled body-builder who watched too much TV and read too many technology mags. — Ben Moor

Et Tu, Babe, by Mark Leyner: £5.99, although currently out of print. Harper Collins: +44 (0141) 772 3200.



Sonic Cathedral with Ross Jones

Who?










Interesting fact

Key terms

Loop it

Skip it

Now try...

Tricky	Juliana	Paul Schütze	Dream	Bomb	Faith No More	Funkdoobiest	Mudhoney	The Orb
Maxinquaye (Island)	Hatfield Only Everything (East West)	Apart (Virgin)	Warriors Subliminal Simulation (EMI)	the Bass Clear (Stoned Heights)	King For A Day... Fool For A Lifetime (Slash/London)	Brothers Doobie (Immortal/Epic)	My Brother The Cow (WEA)	Orbvs Terrarvm (Island)
								
Occasional rapper with Massive Attack, together with singer and fellow Bristolian, Martine	Grunge überbabe, former Blake Baby, and member of Evan Dando's, ahem, backing band	Intermittently hip Australian minimalist composer now living in London	Mystically-inclined Canadian jazz- rappers	Veteran beat-maker Tim Simenon, plus anyone else who happens past the studio door	Everybody's favourite psycho-metal band, now without gui- tarist Jim Martin	Puerto Rican/Native American LA hip hop trio who are good smoking buddies with Cypress Hill	Grunge gods, and the superlative Sub Pop group	The little fluffy student-sedating duo
Many think he invented it, but Tricky thinks trip-hop is "bollocks"	Juliana recently fought typecasting to play an angel in the Xmas special of US teen-angst extravaganza My So Called Life	Paul's quote for Wired: "I completely eschew the use of screen-based com- puter compositional systems and regard symptoms of the so-called information explosion as indicative of a culture suffering from mental bulimia." Thanks, Paul	In the promotional comic accompanying this album, a colleague speaks of new member Spek thusly: "So young, and so down to earth. I wonder if he realises how deep he's becoming"	Tim is a reformed punk whose favourite hang-out was notorious London club The Bat Room	New member Dean Menta is responsible for the music on the Rocket Science video game Loadstar	Rapper Son Doobie's idea of a perfect evening involves "eating a pop tart, smoking a fat blunt, and watching a good porno"	Singer Mark Arm is an avid collector of Apollo moon landing recordings	A sample of Alex Paterson's jacket zip going up and down is a mainstay of most Orb recordings
Soporific, schitzzy, bass-heavy, haunting, indescribably freaky, Portiswho?	Fuzzbox, feisty, pretty, ex-virgin, boys suck, major labels do too	Blade Runner without the visuals or dialogue, Brian Eno's bowel movements, musical palindrome	Vibey, sample clearance, worthy, self-important, mumbo-jumbo, God complex	Major's Britain, Bill Burroughs's wisdom, Sinead O'Connor, incidental music for Rough Guide To Birmingham	Visceral, carnal, scatological, anal, foaming at the mouth rabid, sex in a skip, soft-centred	Cartoonish, head-nodding, gang-banging made fun, gynaecological, bleary-eyed, kazoo	Bile, mosh pit, young men together as Thurston Moore intended, throat lozenges, new guitar strings	Mind-bending, frequency-frying, landscape architecture by synthesiser, dissertation to write
Black Steel, Brand New, You're Retro	Universal Heartbeat, Live On Tomorrow	Makes no difference	I've Lost My Ignorance	Bug Powder Dust	Just A Man, The Gentle Art Of Making Enemies, Digging The Grave	Lost In Thought, Super Hoes, Rock On	The entirety	White River Junction
You don't	Dumb Fun	Yes	Sink Into The Frame Of The Portrait, those poetry interludes	The ones with drum machines on	Cuckoo For Caca	Tama Hawk Bang	N/A	Plateau
DJ Shadow, Ultra-Magnetic MCs, Bow Wow Wow, electroshock therapy	Belly, We've Got A Fuzzbox And We're Gonna Use It	Whistling along with Cabaret Voltaire	US3, Digable Planets, anyone with Donald Byrd samples and a rudimentary knowledge of Egyptian teachings	Justin Warfield, Jah Wobble, shooting up and writing/ recording the first thing that enters your head	Mr Bungle, Bob Tilton, Wet Wet Wet	Tha Alkaholics, Limbomaniacs, Richard Pryor	Pailhead, Sir Mix A Lot, leaping onto your friend's head	Rhythm Is Rhythm, King Tubby, bigger speakers

Microwave o' the Month



Various

Tone Tales From Tomorrow Ntone/Vital

"60 minutes of telepathic texture trips" from UK house pioneers Coldcut and friends, but this ambient-by-numbers exercise has nothing new to offer. I've heard more involving music in the background of self-hypnosis relaxation tapes. — *Dave Green*

MUSIC ACCESS

If you'd like to hear
excerpts from these discs,

call (0839) 363738

(Calls charged at 39p per minute cheap rate,
49p per minute at all other times)

Touch tone required. UK only.
Under 18s — please ask the permission
of the person who pays the phone bill.

When prompted,
enter appropriate
access code
(shown below).

Press * to exit music
and bypass prompts.
Listen for details
of other controls.

A charge of 39p per minute (cheap rate) or 49p
per minute (all other times) will appear on your phone bill.
Music Access samples for reviews in this issue are active
March 22, 1995 — April 22, 1995.

In the table below, you'll find a single-digit code for each album. To hear sample tracks, dial the 0839 number above, entering the code when prompted. You'll hear up to three minutes of music. To leave the music, or bypass the prompts, press *. To use Music Access, you need to have a touch-tone phone, dial from the UK, and ask the permission of whoever pays the phone bill.

Code	Artist and Title
1	Tricky, <i>Maxinquaye</i>
2	Juliana Hatfield, <i>Only Everything</i>
3	Paul Schütze, <i>Apart</i>
4	Dream Warriors, <i>Subliminal Simulation</i>
5	Bomb the Bass, <i>Clear</i>
6	Faith No More, <i>King For A Day... Fool For A Lifetime</i>
7	Funkdoobiest, <i>Brothers Doobie</i>
8	Mudhoney, <i>My Brother The Cow</i>
9	The Orb, <i>Orbvs Terrarvm</i>

Page Boy

Following the social rehabilitation of the mobile phone (once the exclusive accessory of yuppies and drug dealers), maybe it's time to reassess the mobile's idiot brother — the pager. These are now appearing in the high street at prices any busy businessperson can afford — although, reassuringly, they still have the potential for making people think you're a doctor.

For £80, I splashed out on a Motorola Lifestyle Plus. It has all the vanilla features for a numeric pager: LCD display, stores up to 16 messages, bleep or vibrating alert, and attractive belt/tie/hair clip. What's missing is the monthly rental — using Mercury's MiniCall scheme, the brunt of the system's cost is paid by those who page you. My unsuspecting friends call a premium rate number to drop off their message, and the extra charge goes straight to Harry Enfield. Apart from new batteries every three months or so, that's all the pagee has to pay for.

In my experience, this system works fine. Callers ring the pager's 0839 number then tone-dial their message, or else speak v-e-r-y s-l-o-w-l-y to the voice-recognition system. The caller's telephone number makes the ideal calling card, I find, though you can always fall back on those prima-



Turn back the pages of history with the Motorola Lifestyle's message store.

ry school inverted-calculator classics: 710 77345 to indicate that your car has broken down and requires petrol, say.

Sadly, the Lifestyle also features the classic flaw of all pagers. To keep the price down, pagers are designed only to receive, not transmit — unlike mobile phones, the communication is one-way. In practice, this means that, although the Mercury network (usually) confirms that it has transmitted your message, neither you nor the network can check that it's been received. If the pager is currently out-of-reach (on the Underground, say, or hanging about in a home-made Faraday cage), it won't get the message, and you'll never know. On the brighter side, the lack of a billing system makes it possible to buy a pager off the shelf without having to supply your name or address. Marvellous for gifts (I bought one for my girlfriend; my father bought one for my sister). Or if you really *are* a drug dealer.

All this, plus a gorgeous semi-transparent plastic housing, which reveals tantalising glimpses of the electronics inside. You don't see anything happen when you're getting paged (more's the pity), but it adds a bit more high-tech kudos to one smart little accessory. — *Dan O'Brien*

Motorola Lifestyle Plus: £79.99. Mercury Paging: FreeCall +44 (0500) 505 505, fax: (0181) 914 6696.

Hitting the Mother Lode

Like most nerds without lives, I can reminisce endlessly about the computer games I used to play. Yet only a precious few are still fun in the '90s. One of those is *Lode Runner*, which, more than a decade after its debut, is still a great action/strategy game. Now it's been dragged kicking and screaming into the era of SVGA graphics and MIDI sound while taking addictive play to new heights.

You play Jake Peril, adventuring fool, on a quest for treasure while avoiding the red-robed Mad Monks. Jake's



A monastery of death.

only defences are his wits and trusty laser, which blasts holes that the not-so-bright Monks fall into.

The game's 150 levels are made more difficult by the milling Monks, the placement of the treasures, and the levels, which seem designed by Beelzebub himself. If the built-in puzzles aren't enough, the all-new *Lode Runner* even has a construction mode so you can create your own hellish worlds. — *Zach Meston*

Lode Runner, for Mac and PC: £39.99. Sierra On-Line: +44 (01734) 303 322.



Driving Ambition

There's a lot of top-view racing games around, but they all look a tad feeble before the pumping powerhouse of a game that is Acid Software's *Roadkill*.

It's not that *Roadkill* is particularly sophisticated — it isn't. It's just that *Roadkill* plays like it's been written by people who love games. It wins on enthusiasm alone.

The intro is thrilling, but it's the soundtrack that urges you on. As you race round the hazard-strewn track, picking up missiles and bashing cars into laser barriers in the way that you do in these "It is the future — War is a thing of the past and violent sports occupy the minds of the masses"-type games, you're



"Take his life!" indeed.

constantly goaded by a man with a very gravelly voice. "Take his life!" he shouts, and you've just GOT TO blast the guy in front. "Get the Super Jackpot," he intones, further whetting your growing appetite for destruction.

There's no tedious upgrading your car, and no two-player mode. It's all relentlessly single-minded, but with increasingly fiendish courses and an all-encompassing mood of passion, *Roadkill*'s hard to ignore. It wants you to play it, and in all honesty, I think you should.

— Abe Froman

Roadkill for Amiga CD32: £29.99. Guildhall Leisure Services: +44 (01302) 890 000, fax +44 (01302) 891 010.

Ferrous Particles' Day Off

Even the most plugged-in, cabled-up, and dished-out TV watcher can crave something different, something a little peculiar, something weird. Which is where the 120-page *Something Weird Video Catalogue* comes in handy.

This isn't just another list of obscure B-movies that you may have seen on late-night TV. Seattle-based *Something Weird*'s speciality is exploitation movies from the '50s to '70s — grindhouse and drive-in cheapies that aren't listed in film guides (not even the hallowed *Psychotronic*) — which company prez Mike Vraney calls "unseen cinema". By hooking up with the makers and distributors of this salacious celluloid, Vraney has dug up original prints of over 1,200 titles and nabbed the pulse-racing by-product in the shape of original drive-in commercials, plus hours and hours of trailers (the 11-volume *Twisted Sex* series, and no less than 17 volumes of Horror/Sci-Fi trailers).



Tapes of 1,200-plus trashy exploitation films lurk within these pages.

Highlights that leap out of their picture-packed, alliteration-littered catalogue include a pair of long-lost Betty Page features (*Teaserama* and *Varietease*), the bulk of gore-master Herschell Gordon Lewis's oeuvre (including *Prime Time* — a first for him and Karen Black), and a selection of super-obscure Ed D. Wood Jr's (*Take It Out In Trade*, anyone?).

Through their massive inventory and excellent quality prints (always from original 35mm) *SWV* has gained itself quite a reputation, working with sleaze-obsessed posters The Cramps, and receiving regular requests to have the material used for CD-ROMs. The new technology doesn't grab Vraney, who saves his enthusiasm for video, but he doesn't rule out the possibilities entirely. In the meantime, the only way to catch the *Something Weird* bug is on NTSC video, a drag for PAL users but it's a problem worth wrassling with. — Ben Olins

Something Weird Catalogue: \$5. *Something Weird Video*: PO Box 33664, Seattle, WA 98133, USA.

Small not Beautiful?

Bennett Harrison's book *Lean and Mean* is a lucid introduction to the rapidly changing structure of global business. Harrison is unusually frank about the difficulty of using economic data to draw firm conclusions, but he is clearly out to burst bubbles. He states: The power of the largest companies is not dissolving — it's concentrating and consolidating; small firms are not the primary engines of innovation and job creation — they're systematically backward in their technology; business is not becoming more entrepreneurial — businesses are committing themselves to an ever-deepening system of alliances.

Trends such as these can be difficult to analyse, but Harrison tackles them with a tremendous wealth of knowledge. As businesses reorganise for global production, they find more ways to increase their flexibility — such as switching easily between suppliers. Harrison calls this "concentration without centralisation" — global firms do not need to be headquartered in one spot, so long as they can coordinate their activities and resources.



Harrison has his finger on the pulse of this changing world.

Yet, as production becomes more complicated, it becomes increasingly difficult for any one firm to master all the necessary skills. The result is more "networked production systems" created by strategic business alliances.

Harrison argues that these contribute to a divergence between rich and poor in the world economy: the global firms' flexibility allows them to shift costs and risks onto their suppliers. His prescription for avoiding this "dark side" is simple: "technology, training, and technical assistance."

Harrison's arguments are somewhat convincing, but probably won't satisfy techno-savvy readers. If networks provide flexibility to the powerful, they offer everyone else a way to keep in touch, compare notes, and seek out new types of co-ordination. Harrison's dark assessments of the present are pretty much right on, but there's still plenty of room to be creative about the future. — Phil Agre

Lean and Mean: The Changing Landscape of Corporate Power in the Age of Flexibility, by Bennett Harrison: £17.95. McGraw Hill: +44 (01628) 23452, fax +44 (01628) 21662.

Subvert Your Mac

The interactive zine *i/o/d* is available for free on the Internet and other networks. Combining abstract techno-prose and some fairly alarming imagery, it is a fast, dense journey through the minds of a few of the UK's moodiest critics of new technology. Ideas are presented via a Macromind Director player, incorporating Matthew Fuller's moving text, sharp animations from *Underground* magazine's Graham Harwood and cut-and-paste scanned cellphone music by soul-stealing pop star Robin Rimbaud. Short pieces of audio and visual prose by Mark Amerika and



A sea of troubles.

Stephen Metcalf are also available via the ingenious floating menu.

i/o/d is technically brilliant and stylistically unique. It pulls off every trick possible with Director on an 8 meg Mac, while making you want to turn off your computer immediately, which I guess is just what it is supposed to do. — James Bloom

i/o/d: available as a self-extracting archive via ftp hyperreal.com/zines/i_o_d, WWW at <http://www.uio.no/~mwatz/i.o.d/>, on Usenet as topic 135 in *alt.arts.nomad*, and on pHreak BBS: +44 (0171) 434 3800.

1. Hyperlinking from Home

Magazines are full of Web-site pics suggesting that Netscape and Mosaic are the friendly face of the Internet. What they don't point out is how long they'll take to download over a modem — at 28.8 kbps it's bearable, but at 14.4 it's like watching a VCR permanently stuck in slow motion. Until there's cheaper ISDN to the home, WWW browsing will remain a specialist hobby rather than a serious threat to television. For faster, cheaper GUI-based access with a sense of community thrown in for free, the cool set are logging on to their local BBS.

2. Romancing the Hacker

Whether it's the hunt for Kevin Mitnick, *Burn Cycle*'s risible brain-virus plot, or the *Hackers* and *Johnny Mnemonic* movies, those old 80s cyberpunk memes are back with a vengeance. Romanticised images of digital samurais stalk the infoways once again, perpetuating the myth that you don't need any controls on what big companies keep on their computers, because any smart teenager with a battered PC can dial them up and check if they're doing anything dodgy. Of course, no-one's looking forward to the new cyber-movies more than us, but they'll be hard-pressed to better true techno-kitsch classics like *War Games* and *Tron*.

	Current Position	Position Last Month	Months on List
Hyperlinking from Home	1	—	—
Romancing the Hacker	2	—	—
High-Tech Outrage	3	—	—
Lateness of Windows 95	4	—	—
Bigger, "Better" Compression	5	—	—



3. High-Tech Outrage

Books allowed complex theories to be disseminated, TV brought titillating images of sex and violence to the home, and the Net — well, the Net seems best at spreading controversy. The last few months have seen wave after wave of outrage sweep over the Net. First it was polemics about the Pentium flaw, then it was attacks on the patented GIF algorithm, now it's debates about IP security holes. Sure, the strength of a many-to-many medium is that it allows for grass-roots organising, but can't it empower us to do something other than complain?

4. Lateness of Windows 95

It's hard not to share the industry's *Schadenfreude* at Microsoft's hugely public schedule slippage, although recent press releases describing features like the "WinToon animation engine" don't exactly inspire sympathy. But even if Bill & Co. manage to ship this year, putting the date in the name is a marketing timebomb. As Robert X Cringley points out in *Accidental Empires*, Adobe already made this mistake with *Illustrator 88* — there's nothing worse than heading into 1996 when your flagship product still has the digits "95" proudly displayed in its title.

5. Bigger, "Better" Compression

It's been hailed as the solution for everything from slow modems to video on demand, but putting more content through a smaller channel always comes at a price. People are starting to notice the weird artefacts in sloppily encoded MPEG videos, and the Unisys/CompuServe controversy shows that many prefer the loss-less compression of a GIF image over its lossy JPEG equivalent. Meanwhile Shannon's law looms — we can't expect compression techniques to improve *ad infinitum*. Hey, if you could compress a whole file down to a single bit, how would you get your original data back?

— Dave Green/Steve G Steinberg

Street Cred Contributors

Phil Agre teaches communications at the University of California, San Diego, and edits *The Network Observer*, at <http://communication.ucsd.edu/pagre/tno.html>.

Andrew Anker is the president of *HotWired*.

James Bloom (james@pinkrobo.demon.co.uk) inhabits the non-space between the possible and the real. He gets about using public transport and a US Robotics 14.4 modem.

Andy Bodle is a freelance editor who specialises in the worlds of *Dr Who* and soft-core erotic fiction. He can't wait to combine the two.

Stuart Campbell is development manager at Sensible Software. He owns a pair of sunglasses with "Press Fire" painted across the lenses.

Kevin Cecil co-wrote the award-winning multimedia CD-ROM *Kiss and Make Up* and is working on the BBC's first cyberpunk comedy show for children.

Arthur C Clarke is the author of *2001* and the inventor of the communications satellite. Now in retreat in Sri Lanka, he ponders the mysteries of this — and other — worlds.

Ken Coupland reports on media and the arts for leading international design publications. He co-wrote *The Multimedia Home Companion: A Guide to the Best in Interactive Entertainment*.

Abe Froman plays videogames instead of working on film and television scripts. He still hasn't got past page 30 of his forthcoming *meisterwork*, 7 Days in June.

Simson L Garfinkel (simsong@mit.edu) is a computer consultant and science writer.

Jim Gasperini (jimg@well.sf.ca.us), author of *Hidden Agenda*, is currently designing multimedia titles for several platforms in Paris and New York.

Dave Green (daveg@solo.pipex.com) passed up a promising career in artificial intelligence to write 8-bit word processor technical manuals. He believes that evil will not go unpunished.

Ross Jones is resident music critic at the *Guardian Guide*. He emphatically does not wish to interview Al Jourgensen from Ministry.

Richard Kadrey (kadrey@well.sf.ca.us) is senior editor at *Future Sex* magazine as well as author of the novels *Metrophage* and the forthcoming *Kamikaze L'Amour*.

Steven Levy (steven@echoyn.com) is a fellow at the Freedom Forum Media Studies Center. He is author of *Hackers*, *Insanely Great*, and other books.

Zach Meston (vgzach@delphi.com) resides in Hawaii and writes videogame strategy books for a living, a lifestyle combination that makes most people insanely jealous and physically ill.

Ben Moor tours the country with his one-man pseudoscience extravaganzas *It Takes Forever If You Go By Inertia and Electricity — The Caged Pony*. He lives entirely on processed food.

Ben Olins is associate editor and TV critic at the *Guardian Guide*. He regards video as mankind's greatest invention, and prefers Eastman Color to Technicolor.

Richard Overton is a very small person at *PC World*, a very big magazine in San Francisco.

Dan O'Brien (danny@tse.cityscape.co.uk) mumbles secret IP addresses in his sleep, and shouts "K!plagh!" at strangers who pass him on his way to work.

Farmer Person (ubstfarmer@uunet.uu.net) is a virtual American who voted with his feet. His influences are FEAR, Sonny Barger, and Robert Vesco.

Jef Raskin (raskinjef@aol.com) created the Macintosh computer project and plays the contrabass recorder in F.

David Stafford is a writer and broadcaster who specialises in science, technology, and unexplained phenomena.

Steve G Steinberg (tek@well.sf.ca.us) is a computer science student and the editor of *Intertek*, a technology and society journal.



You could get on the Internet without CompuServe.

But then you couldn't get off on our 2,000 other services.

CompuServe®

New lower prices, FREE software
and membership, call 0800 289378.

With every-other cover disk offering a sliproad to the Superhighway, getting on the Internet is easy. It's *choosing who you get on with* that's the problem. That's why CompuServe's on hand if you want to get online.

CompuServe delivers Internet access to USENET newsgroups, FTP file transfer and e-mail, as well as a commitment to new products as the Internet grows. What's more, everything is accessed from CompuServe's easy-to-use Windows-based interface — specially designed to avoid the most common *netiquette faux-pas*. You also get thousands of CompuServe services ranging from personal finance to "PA" News, Reuters to AA Roadwatch, the UK What's On Guide, technical support, reference and arts. Monthly membership costs around £6.50 and includes free access to over 100 of the most popular services plus up to 90 e-mail messages a month.

For your free CompuServe software (Windows, DOS or Mac), free first month's membership and £10 usage credit, call 9am — 9pm weekdays, 10am — 5pm Saturdays. Or write to: CompuServe UK, 1 Redcliff Street, PO Box 676 Bristol BS99 1YN.

net surf

Edited by Debbie Fellner

Downloader's

Old Irony: that the computer, the device supposedly destined to render obsolete forever reading and writing has, via the Internet, become the very vehicle for their revival. Great. New irony: most of what's being written is *awful*.

Even with the zizziest hot-cha technology available, most people don't write so good. Not that bad writing is a thing necessarily to be despised. Truly bad writing is one of the funniest things in the world, and when discovered is to be nurtured and encouraged, albeit facetiously. But, as every creative writing teacher knows, few bad writers are bad enough to be good. Most are just good enough to be terrible — and that's really bad.

I've spent many hours over many months roaming and rampaging through Usenet groups in search of really awful writing. I found displays of various writing "styles", none of which were good enough to be good or bad enough to be great. Look for them coming to a screen near you:

The Sincere Confessionalist

"Doug, you accuse me of falsifying your position, but I never said you said trees **MUST** possess a primitive form of consciousness because look how stupid rocks are. I wrote that you **MIGHT** think that, but at the time I had broken up with Leah and my roommate was in the process of converting to Mormonism. I was therefore under intense pressure to..." (etc).

This sort of thing is best confined to e-mail, but too often it winds up being posted publicly. "Just don't read it" is the only possible response, but how can you tell how dreadful it is if you don't? Treasure or tripe, it all looks the same on the screen.

The Pretentious Windbag/Windbaguette

"It never ceases to amaze me how so many can be so ignorant compared to the few. The fact is that Ayn Rand was, for the first sixteen years of her life, a man, and indeed her name is an anagram of I AM A MAN. But the rabble are always the last to hear what the cognoscenti know at birth."

You find a lot of this (alas) in groups devoted to the humanities:

history, philosophy, religion, literature. Cruise *rec.arts.books* for particularly, er, uplifting examples.

The Disingenuous Technical Show-Off

"Re their previous post, that 'headphones are fun to listen to,' bear in mind that $P \times dB/t$, where P =sound pressure, dB =average (!!) volume, and t =time of exposure, means that for any given driver at distance $d(1)$ from one ear and $d(2)$ from the other (I'm assuming drivers are in unequal proximity to the ears), the total harmonic distortion **MUST** > mean deviation from..." (etc).

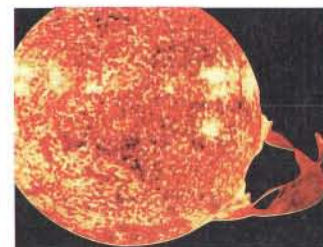
Helpful, well-meaning technologue, or self-aggrandising smarty-pants? Both.

The Innocuous Letter-Writer

"Hi. Does anyone know how to pronounce Prince's name now that he's using that symbol? If he falls down in a forest, and breaks his leg, will somebody hear him? Thanks."

There is nothing wrong with this. Straightforward, devoid of artifice or pretence — if only the whole Net were written thus, the world would be a better place in which to interface. Until it is, amid the occasional displays of wit and modesty, we will have the above and other forms of vanity, temperament, obliviousness and posturing. How can you help? Resist the jackal-headed hyena of pretension. Don't swan or swagger around. Be yourself — but only if your self is a lucid, reasonable person. Otherwise, be someone else. And please — make an effort. The whole world is watching.

Ellis Weiner (yox@delphi.com) is head writer of the children's show The Puzzle Place and writes the "Fear" column for Spy magazine.



Go planet-hopping at *Views of the Solar System*
<http://www.c3.lanl.gov/~cjhamil/SolarSystem/homepage.html>.

Get Your Daily FiX

Well, maybe your monthly *FiX*. The new e-zine being produced in the depths of the London-based Net cafe, Cyberia, features bits of twisted news, sex tips and general good reads. The creators of *FiX* used to publish another mag in that old tree-based medium, paper, but say they can get away with more on the Net. Just what are they trying to get away with? You'll have to read the next fixture of *FiX* to find out.



◀ Postcards from the Cutting Edge

"Having a great time, wish you were wired!" Travelling the Net? Miss your buddies back at the domain? Send 'em a postcard! If your friends use both the Web and e-mail, you can send them a note through the MIT Media Lab's *Electric Postcard*. Duck into the site and browse the postcard rack offering more than 35 different designs, including well-known artists such as Kandinsky, Van Gogh, da Vinci, Gauguin and the Alice in Wonderland print dude. You'll find a few non-classic gems as well (the stark New York black-and-white postcards were my personal faves). Choose a card, slap on your friend's e-mail address, type your message into the provided field, add your name and address, then hit "send"! Your friends will receive notice (via e-mail) that their cards are waiting for them; the note will give them both the Web page address and a claim number with which they can receive their cards.



Bright Lights, Big City.Net

City.Net is a huge resource for finding tourist and service information about countries, cities and towns around the world. It sounds like the typically-hyped web info-filter that we all need and never get, but provides a surprisingly useful reference point for getting the low-down on places. Half an hour of Net teleport-enabled physicality-avoidance is enough to convince even the most bleary-eyed geek that the service is for real, and not just a bunch of anchored ancient ftp sites gone 404. Linking into Europe, and then into the capital city of Ljubljana in Slovenia, you are given a choice of hyperlinks to pictures of works by the Venetian sculptor Francesco Robba, paintings by unknown Slovenian impressionists, and a number of photographs of the city that, well, almost make you feel like you're actually there.

Subway Survival

It was late. Almost too late. The deadline was approaching. If we were late, I would be a goner. But how do we get from Piccadilly to Tower Hill? We leaned on a statue of a lion; John flipped open his notepad. We plugged it into my mobile phone (digital connection, naturally). Up comes Netscape. Bookmark to:

<http://metro.jussieu.fr:10001/bin/cities/english>.

So many countries to choose from: Europe, USA and Asia. Check the route planner for London. Change at Embankment. No timetables there yet, and no maps (if you have one let them know). "So," I said, "we should be back in time to meet your mum, after all."

America's Federal Theme Park

When you try to call a Federal agency in the States, you're transferred to at least 10 different people who inevitably send you right back to where you started from. If you are really curious to see how those wacky transatlantic politicians work, telnet to *FedWorld* — the federal gateway to 10,000 different agencies and bureaucracies. Looking for White House press releases, the latest reports on the National Information Infrastructure or the text of the Health-care Reform Bill? Maybe you fancy a list of patents that can be licensed, or downloadable weather-satellite images? It's all there. The agenda for the NII was available for downloading within a few minutes of its official release. President Clinton's outline for health-care reform was available for downloading as he was speaking to Congress about it. Dial one number, and gain access to more than 130 other federal bulletin boards and databases. All this, and you'll never have to talk to a bureaucrat again! (Unless, of course, you really, really want to.)

Net Therapy

A group of good Samaritans in Cheltenham are reaching out to despairing and suicidal surfers through e-mail counselling. After making a quick enquiry about the legitimacy of their services, I was asked if I was feeling OK. They plan to expand soon, but currently there are ten trained volunteers ready to answer your electronic pleas. So, here's an e-mail address we hope you will never have to use: jo@samaritans.org

ferret-mania!

Even surfers can't finish their late-night pizza from time to time. And what better, burpable way to store it than in some Tupperware. For many, the name Tupperware will recall fond memories of family outings in the brown V-reg Maxi. This durable, lifetime-guaranteed line of food bins made from space-age polymers has been manufactured by the Tupper company since 1951. Unfortunately, they are not sold in any store. Hence, the invention of that cultural anomaly, the Tupperware party.

Virginia Bedow and her computer-savvy son, Matt Walton, decided it was time to bring these swanky shindigs to the post-modern age via the Internet. Their dream: to introduce online parties, a downloadable catalogue of Tupper tubs (in full-colour JPEG format), and e-mail forms for placing orders to IRC. And so, *TuppNet* was born.

Or perhaps not. Bedow soon received a Phone Call. Aside from the obvious complaints the Tupper folks might lodge, it seems a bone

of contention was that TuppNet was taking business away from overseas operations, as the Net knows no international boundaries.

What makes the jackboot treatment peculiar in this case is that Bedow is a 20-year Tupperware executive manager with official privileges that include use of a company car.

Perhaps the Tupper-folks are really, really worried that Bedow just might single-handedly destroy their domination of the international food-storage-bin industry. Perhaps they thought *TuppNet* was a keen idea, and Bedow should get out of the way so the big boys could do it right, thank you very much. This case hasn't been settled yet.

In the meantime, you can still request information by sending e-mail to Matt.

We've got Whitehall wired and Labour online, and now, the Information Market Europe web site will blow the socks off any attempt at html from hi-tech speaking MPs. The *I/M Europe* site is an initiative by the EC to provide the Web with information about Europe and the European electronic information market. Through a link to the EU from the *I/M Europe* home page, you'll find the Bangemann report from

June 1994, written for the EC by "prominent people" in the information and tech markets. You can also send e-mail to *I'M Europe*, and they'll send you both e-mail and snail mail responses.

You've spent your day working like a dog; you're stressed, tired and worried about rent. On arriving home, you take one look at your purring house-mate, and whammo!

Serious cat envy. Now you can finally indulge your feline fantasies. Forget the woes of the world, taxes, and the landlord — just lie around. Get that free lunch (or breakfast or dinner). Take a relaxing dip into the catnip. For a purrrfectly good time, a cat's life is just a modem link away at the *King O' Cats* BBS. Fire up your rip-term graphics and discover the virtual pleasures of Whiskers ^(TM). Choose your own name, breed, personality, and markings, then prowl the neighbourhood causing mischief and mayhem with other cats from around the country. Or cause a stir and play a dog in cat's clothing — all from a cat's-eye view. (The funky, cubist-esque graphics are truly the cat's meow.) But pounce with caution: in this game, you have only nine lives. Lose 'em, and you'll have to start all over again, right from login.

America's Federal Theme Park

Modem: +1 (703) 321 8020

Telnet and ftp: *fedworld.gov*

Web: <http://www.fedworld.gov>

Voice: +1 (703) 487 4608

Hep Cats 2000

Modem: +1 (206) 340 9058

Postcards from the Cutting Edge

Web: <http://postcards.www.media.mit.edu/Postcards/>

EC Gets Wired

Web: <http://www.echo.lu>

Subway Survival

Web: <http://metro.jussieu.fr.10001/bin/cities/english>

Bright Lights, Big City.Net

Web: <http://cityv.net>

Net Therapy

E-mail: jo@samaritans.org

Get Your Daily FiX

Web: <http://www.easynet.co.uk/fix/fix.html>

Tupper War

E-mail: tuppnet@netcom.com

Ftp: <ftp://ftp.netcom>.

com/pub/tu/tupppnet/

Bonus

For that whip-around-the-web sensation, you could do worse than set your home page to David Filo and Jerry Yang's WWW guide, bookmark to *Yahoo*.
<http://akebono.stanford.edu/yahoo/bin/menu?44,11>

**Thanks to the Wired 1.01
Surf Team**

Simon Groves sgroves@savant.cityscape.co.uk

James Bloom james@pinkrobotdemon.co.uk

George Everett geverett@aol.com

Justin Hall *justin@*

cyborgasmic.com

Marcos Sanchez marcos@nrh.com

David Voss dvoss@aqas.org

needed...
one powerful
processor

x/Open[®]

chief
marketing
officer

X/Open is an international organisation that develops and delivers practical ways of implementing open systems standards for buyers and suppliers of information technology products.

Their success can be measured by the fact that the X/Open Brand of conformance has been adopted by 35 major IT suppliers worldwide and that by 1997 more than 50% of IT purchases by corporate business and government will be for products that conform to their open systems standards.

Palm-top computing and digital superhighways are among the new technologies that promise a global mass consumer market for digitally delivered information and entertainment.

Whilst opening up exciting new commercial and social possibilities, these innovations do however also raise complex issues in respect of compatibility and interoperability when it comes to taking them from the lab and into the marketplace.

X/Open is extending its domain from the arena of mini computers and mainframes to address these new markets created by the convergence of communications and computers.

Key to this initiative will be the recruitment of a dynamic and action oriented international executive to spearhead the sales and marketing activities of the organisation in the US, Japan and UK.

If you believe you possess the breadth of vision and experience necessary to meet this extraordinary and high profile challenge, please write, fax or Email James Plummer at Prospect Management Services Ltd
Arlette House, 143 Wardour Street, London W1V 3TB
Fax +44 171 437 1791 Telephone +44 171 439 1919 Compuserve 100073.2070



Colophon

Wired is designed and produced digitally.
Our thanks to the following companies:

Hardware

Apple Macintosh Centris, Performa, PowerBook and Power Macintosh personal computers; Viglen Genie PCI 4DX66; Radius accelerators; Hewlett-Packard LaserJet 4MV; AGFA Arcus Plus flat-bed scanner; ProDrive SyQuest drives; Cabletron Ethernet and LocalTalk networking; USR V.34 modems.

Software

Page layout and illustration: QuarkXPress; Adobe Illustrator, Dimensions, Streamline and Photoshop; Fractal Design Painter; Kai's Power Tools and XAOS Tools Photo-shop plug-ins; Altsys Fontographer; Alias Sketch; Electric Image Animation System; Specular Infini-D.

Typography: Text: Adobe Myriad and Walbaum Book.

Networking: Apple PowerTalk; StarNine; Qualcomm Eudora; Dantz Retrospect Remote; Unix weenie documentation: O'Reilly Associates.

Electronic prepress and printing by

Quadcolour Reprographics Ltd & Cradley Print Ltd.

Colour separations are made on a Scitex Smart 730PS Scanner linked directly to a Scitex Whisper System. Preliminary colour corrections are performed on a Scitex Softproof Station & proofed on a Scitex Iris Smartjet 4012. Additional electronic pre-press is performed in-house at Wired, using scans from the Scitex Smart 730, Agfa Arcus Plus & Kodak Photo CD. Composed Quark Xpress pages are then converted to PostScript, which is then translated into Scitex language and sent through Gateway Tools 2.0 to the Scitex system's Micro Assembler. Composed digital proofs are submitted for final approval. Final film is plotted on a Scitex Dolev and Raystar.

Printed on a BI Heidelberg Speedmaster.

Cover & additional reprographics by Precise Litho.

Wired is printed on:

Cover: 200gsm Chromo Matte Club
Text: 80gsm Galaxy Semi Matte

Media that helped get this issue out:

Hate Comic; Brookside; ER; As Seen On TV; The X-Men (all media); The X-Files; Joking Apart; Gladiators International Finals; Raymond Carver's No More Heroics, Please; Sportsnight (Southampton 2 Tottenham 6); Giant Science; OnLine Radio; Dallas Morning Herald Sports Pages; OnLine; Red Rock West; Lord of Word and the Disciples of Bass; Combustible Edison, I, Swinger; Orbital, First Album; Luscious Jackson, Natural Ingredients; Boo Radleys, Wake up Boo!; Elvis, 20 Golden Greats

Drugs of choice: Denis's Coffee, Twiglets, Buxtons, Zelda, Nutrasweet, Trebor Extra Strong Mints, lots of tea, Stoli/Cranberry.

Wired, April 1995, Volume 1, Issue Number 1.

Wired (ISSN 1357-0978) is a publication of Wired UK Ltd, 119 Farringdon Road, London, EC1R 3ER.

Subscriptions, payments, problems or enquiries:

Tel: +44 (01424) 758 300; Fax: +44 (01424) 755 519;

e-mail: subscribe@wired.co.uk;

Snail mail: Wired, Freepost TN 7268, PO Box 101, Hastings TN35 4BR

Individuals (12 issues) £37.80, Europe £44.00, Rest of world £50.00; Corporate (12 issues) £42.00, Europe £49.00, Rest of world £56.00

Cheques/postal orders payable to Wired. Foreign subscriptions payable by credit card or UK bank cheque.

**21-22 April****Digital Diaspora; New York/London**

Artists at the ICA in London and The Kitchen (cyber café) in New York City will host a live ISDN link to carry video and audio signals for a Digital Slam. "Slam" is the live electronic exchange of art, music, prose and video from contemporary black culture. This is the first in a series of events this spring from London's Digital Diaspora, an international network of multimedia artists, writers and media practitioners.

Tickets: £8-£10 day pass, £14-£18 weekend

Contact: +44 (0171) 930 3647, e-mail digital@diaspora.co.uk

21-23 April**MEMS 95; London Olympia**

High-tech music fans will find the latest innovations from the worlds of electronic music and home computer sound production at Future Music's MEMS (MIDI, Electronic Music and Recording Show) exhibition. Sound-mixing hobbyists and professionals alike can trade tips with reps from more than 60 companies, who will be demo'ing their latest products and offering free seminars.

Tickets: £5 in advance, £8 at the door

Contact: +44 (0122) 544 4801, fax +44 (0122) 544 4602,

e-mail abc@cityscape.co.uk

29 April — 4 June**Video Positive '95; Liverpool**

This biennial event, organised by Moviola, is the Noah's ark of video and electronic arts — well, almost: 35 days and nights of video installations, CD-ROMs, screenings, experimental art, live performances and every other e-art known. More than 50,000 people attended the event two years ago.

Registration passes: Delegate £25, Festival £15-£20, Weekend £7.50-£10

Contact: +44 (0151) 707 2150, e-mail moviola@cityscape.co.uk

27 April — 20 May**MayFest; Glasgow**

A whole month of arts and entertainment to liven up your spring. Stormy Waters, the "Internet Event," might be of interest to net surfers and the globally-minded. Images of Glasgow history and architecture created by NVA and Tomato design-house will be exchanged via ISDN in (near) real-time for artists around the world to add renovations and alterations. The new constructs will then be projected on big screens all over the city.

Tickets: £2-£15 Mayfest (Stormy Waters: 19 & 20 May, Tickets: £4-£7)

Contact: +44 (0141) 227 5511, Web: <http://www.demon.co.uk/stormy-waters/>

16-18 May**Internet World; London**

Consumers and businesses on the Net will converge at Wembley for Learned Information's first presentation of Internet World. The exhibition is free, but to get in on the big-wig conference, you'll have to pay. But it could be worth the money with top level speakers from the UK and overseas.

Contact: Learned Information: +44 (01865) 730 275, fax +44 (01865)

736 354, e-mail conferences@learned.co.uk

30 May — 1 June**SHOWTECH; Berlin, Germany**

Catch the seventh instalment of SHOWTECH: Magic Moments, a show of how to show. In other words, an exhibition of the latest technologies in event and stage equipment. Vendors' products range from advanced AV/sound systems, digital editing equipment to online booking networks. It's the complete work of "show," including a cornucopia of demonstrations and special-effects programmes. Las Vegas, eat your heart out.

Tickets: £15-£25

Contact: Overseas Trade Show Agencies +44 (0171) 486 1951,

fax +44 (0171) 487 3480

If You're Going to Liverpool for Video Positive '95

Liverpool boasts more guitarists and night clubs per capita than most cities in the world. So, wind down after a day at **Video Positive** at one of Liverpool's many after-hour hot spots.

There are a few pubs you should not miss. **The Philharmonic** in Hope Street, between the city's two cathedrals, is architecturally famed for both its art nouveau gates and its wonderful ceramic and stained-glass toilets. It's crazy I know, but people have travelled from miles around just to say they've been in there. Down the road from the emblazoned toilets is the **Everyman Theatre**, which offers not only innovative productions, but also houses **The Bistro**, the chosen haunt of the drinking community with its later opening hours at the weekend. Seek out the **Yates' Wine Lodges** in Charlotte Street and Moorfield's, but don't drink more than one of the infamous Aussie whites — you were warned here. Also, check out the local brew Cain's Ale; it's tasty and not damaging to your health. **The Lisburn** in North John Street is another famous icon from the sixties much favoured by the current bohemian crowd, with a laid back, liberal spirit.

Continue the party into the night at the techno-house club

The Nation in Wolstenholme Square. A popular local favourite is **Cream**. Ask around for it, everyone knows where it is, and you'll sound like a local.

For a more sedate and cultured evening, Liverpool also has a thriving jazz and blues scene.

Check out **Heebiejeebees** and **Bourbon Street** which offer the best in local talent. Both are near Liverpool Palace and Seel Streets.

Hartley's Wine Bar in the Albert Dock offers a good backdrop to the view of the river.

Liverpool was once known as the capital of Ireland, and this is reflected in the music heard in

Rosie O'Grady's in Hanover Street and **Flanagan's Apple** in the famous Matthew Street. This is also home to the **New Cavern** and the **Abbey Road** pub in the Cavern Walks arcade. For good old fashioned live rock, take a trip to the **Picket** in Hardman Street.

On the dayside, the most visited tourist attraction outside London is the **Albert Dock**, next to the Pier Head. Apart from visiting the dock to see what was once the world's biggest grain warehouse, it's worth a special trip there to see the newly-opened **Slavery Museum**, a cultural attempt to highlight the legacy of a history of slavery in this country. Also, don't miss the **Tate Gallery** within the dock, for a 20th-century artistic perspective.

Within the city centre, the cosmopolitan history is still apparent. The old **Chinatown** still stands as testimony to its once-proud place as the largest and oldest in western Europe.

Try any of the restaurants on Nelson Street, the food is always good, and the atmosphere alive. **Mr Tso's Restaurant**, opposite St. John's Street in the heart of the city, is a great spot, particularly at the weekend when food is served until four in the morning. From here you can also see the striking revolving tower that was once known as the "Beacon" restaurant, and still stands above the cityscape even though it no longer spins.

Most importantly, be prepared for a city where people will want to talk to you, and have a laugh. Life's far too serious to be taken seriously here. And look around you as you walk. Liverpool has over 2,500 listed buildings, and has had more films made about it than any city in the world other than New York. — *Ian Soffe*

Thanks to the sixties swingers Kath and Mal Soffe, and the nineties dons of dance Mike and Barbara.

Viacom

◀ 92 creator, the first issue I face is, 'How do I divide up this nonlinear environment into usable work plans?' Horowitz divides that "nonlinear" market into three distinct segments, each with its own problems and potentials.

First are cartridge and CD-ROM titles, a segment beset by platform wars ("we have to develop the same content three or four times," he says), but harbouring enviable growth and the lurking possibility of Donkey Kong-like megahits.

Second is narrowband interactive, the world of the Internet and America Online (AOL). True to his Viacom character, Horowitz sees this venue as worthy because of its growing acceptance into the home. ("If there's several million people using this media service, we'd like access to those users with our content.") But narrowband online is muddled by the lack of a formal architecture, an immature market structure, and the anticipated entry of Microsoft into the mix. Here Viacom's offerings are modest, but with Darby and Sueann Ambron overseeing a suite of unannounced products, much is in the works. MTV is already on AOL (and was the most heavily used area on AOL last summer, according to the executive in charge of the project). Paramount also has a Web site for Trek fans (<http://voyager.paramount.com>).

Third is broadband interactive, or interactive television, which Horowitz thinks will probably focus more on the television set than the PC, and may end up developing out of networked gaming environments, not the old video-on-demand and home-shopping markets other companies seem to be betting on. This might explain why Viacom, through its new subsidiary Blockbuster, is a major investor in Catapult, a company that is doing just the kind of gaming network Horowitz envisions. It's a classic HBO twist: take an engine – movies for HBO, games for Catapult – and let it drive a service into the home. Once the service is in place, you have access to the most valuable asset in the new media world: venue.

Own the Venue

Buying a stake in Catapult is a minor investment compared with purchasing Blockbuster, or forming another television network, but it reflects Viacom strategy number four: own the venue as well as the brand. Viacom's United Paramount Network is an attempt to outfox the big four networks with yet another collection of syndicated programming, male-focused comedies, and that big brand name,

Star Trek. While it sounds like the same-old same-old, when you look at it from the viewpoint of Viacom's general heuristics, it starts to make sense. If major networks are the beachfront property of the information age, as Turner Entertainment's Scott Sassa puts it, then Viacom wants to make sure it gets prime towel space. And if the United Paramount Network craps out, Viacom is now big enough to buy CBS, Viacom's original parent.

Owning the venue is built into Redstone's original business of running movie theatres, which seems ironic given Viacom's new-found focus on content. "We are more interested in owning what's on the screen than owning the hardware that puts it up there," says Horowitz. And while movie theatres and video-rental stores might justifiably be considered "hardware", new media, from television through interactive services, has separated the screen – which now resides in the home – from its distribution network, now called Catapult, UPN, or Blockbuster.

Over at Paramount's Simon & Schuster publishing imprint (merely the second largest collection of printed copyrights in the world), Peter Yunich, president of Simon & Schuster Interactive (which works with Viacom New Media on Simon & Schuster brands) calls it "moving from the physical to the logical page." "The logical page is the ability to deliver content in *any* form that the consumer wants," Yunich says.

Litigate like hell

Focusing on the content keeps Viacom away from the front line of today's raging infrastructure battles, but it doesn't keep Biondi and company from having very distinct opinions on how that infrastructure should develop. Which leads to strategy number five: identify what you want and fight mercilessly to win it. As a result, Viacom has become a force for open systems in the new media marketplace. "We're really concerned about closed architecture in set-top boxes and in telephone delivery systems," Biondi says, his emphasis resting on the word "closed." In the future, a consumer's access to content may well be funnelled through a proprietary set-top box owned and operated by companies like TCI or Microsoft. Biondi is understandably anxious about how content providers like Viacom fit into that particular game.

"If you design the system and you control access, you really control the keys to the market," Biondi says. This is a familiar pattern to a company that has competed in the trench warfare of cable television. In that world, Viacom has aggressively employed litigation

as a method of forcing competitors to back off. At the height of its battle for Paramount, Viacom sued TCI (which was backing Barry Diller's bid for the movie studio), claiming Malone has a stranglehold on the cable industry that threatened to monopolise the information superhighway's development. Biondi now claims that case was a factor in the government's current interest in open access.

It certainly sent a strong message in the insular, deal-driven media industry: don't mess with Viacom's right to get to market. Such a message may ultimately force competition away from the current cable and online model – in which companies compete to slice up and own segments of the market – to a model in which service providers all enjoy access to your living room, and compete purely on the quality of their offerings.

In late autumn, when asked if he had seen prototypes of the Microsoft Network – which Gates had been rumoured to be showing to select industry executives as a means of inviting them into the launch phase of the service – Horowitz had an immediate answer. "I said to Bill, 'I like your vision, but there's only one problem. Microsoft owns it.'"

What bothers Horowitz, though certainly not enough to ignore the business opportunity the Microsoft Network offers, is Microsoft's stated intent to develop its own content on its proprietary network. It's the same problem vexing software companies like WordPerfect or Lotus: Microsoft makes the operating system (Windows) and it makes the applications (Word, Excel). Some claim Microsoft is leveraging the two, creating an unfair playing field for those who don't have access to the proprietary operating system. The question becomes: Will Microsoft do it again in the online world? Horowitz hopes not, but is willing to compete if it turns out that way. "If I had my druthers, Microsoft's (network) operating system would not be proprietary," he says. Regardless, he plans to do business with Bill and Co. "We do content better than they can."

The Future of Interactive

In the meantime, there is work to be done. In the hallways of Viacom New Media, groups of producers, designers, and general media geeks are toying with the concepts that may (or may not) spark the same kind of media revolution that HBO or MTV once did. In one editing booth, a sound engineer toys with an animated program that represents music as an aural journey through a virtual environment, in which the user interacts with a musical lexicon created by the artist. "Form must grow from the artist's intent," states Stephen Gass, who often speaks in looping

adages. "The future of interactive music is not a band on the screen with sliders and buttons at the bottom."

In another part of the building, several Nickelodeon employees are drawing on a large whiteboard, sketching out ideas for an environment in which kid-created figures explore, communicate, and make friends with one another. Sound vague? It is, but on purpose. The people behind core Viacom brands have been thinking hard about how their businesses might translate to the online world, and most of what they intend to do falls under the cloak of trade secrecy. "We can hardly wait till the technology catches up to us," says Geraldine Laybourne.

But the managers of two of Viacom's best known brands, Nickelodeon and Nick at Nite, agreed to share at least a broad sketch of what they intend to do. David Vogler, the recently appointed executive producer of Nickelodeon Online, created an outline characterising Nickelodeon's interactive goals.

"The world of Nickelodeon Online is similar to the world Alice encounters through the looking glass," the outline reads. "It is an alternate universe, a place that is utterly impossible and complete engaging. It does not share the same logic and points of reference of the everyday world... Nickelodeon Online is a totally enveloping world that playfully subverts the medium... it is not driven by 'educational' guidelines or adult agendas. It's about the things that matter to kids and that immediately affect their world."

And here's what Vogler writes about Nick at Nite's future online space: "The Nick at Nite Online service will be the pre-eminent nerve centre for all aspects of classic TV and pop culture. It is the ultimate theatre, library, clubhouse and meeting place for the millions who have the common bond of 'Good TV'. In a sense, it is the virtual rec room for the TV generation... Nick at Nite Online is also the place for interaction with classic ads, games, music, products, experiences, events, movies and other forms of pop culture."

Viacom executives are secretive about details of their interactive and online plans, but they sound like more than another Web site cluttered with shovelware. Ask Michele DiLorenzo about that online future and she gets almost rhapsodic. "Look at a product like *Director's Lab*," she points out, referring to one of Viacom New Media's first software applications, a multimedia authoring product that manages to weave drawing, video and audio clips, and text into a friendly, Nickelodeon-like experience that even adults enjoy fiddling with. "You could certainly imagine something similar to that being a

piece of this interactive place called Nickelodeon. Nick is about empowering kids. And Nickelodeon's *Director's Lab* is absolutely the ultimate product for empowering kids. Letting kids know that they should be inquisitive, that they should ask questions, that they should explore, that they have more power than they think, that they're creative..."

I interrupt this litany, struck that Viacom is making tools that are essentially teaching kids to make interactive television. "It sounds like a training tool for the people you want to hire in ten years," I say.

"It absolutely is!" she replies.

Can This Be Done?

Back when there was still a Media Kitchen, I stopped by to visit executive vice president Nick Iuppa, who four weeks later was considering whether he wanted to move his family out to New York to comply with Darby's unexpected restructuring. Perhaps in a fit of wishful thinking, Iuppa had compared Viacom to the Ancient Roman Empire. "They were very good at creating autonomous countries that they had taken over. Those countries depended on Rome for protection. Viacom has respect for the identity and structure of each of its operating units."

That was certainly true for Virgin Interactive Entertainment – a mature and respected games business with \$120 million in revenues, more than 100 titles across three platforms, and a strong brand name. By all accounts, Biondi plans to leave the company alone with its affiliated studios and excellent distribution network. For the moment.

But a quick dip into the history books reveals that, after a strong run as the centre of the civilised world, the Roman Empire eventually capsized under its own weight. And Viacom certainly carries a heavy load. There's a debt of more than \$10 billion – fiscal heartburn from scarfing up Paramount and Blockbuster. As PaineWebber's Dixon puts it: "Any time you are trying to consume three large companies you'll run into a case of the hiccups." The intricate task of inculcating those companies with Viacom's heuristics is a tricky integration process that could deaden the creative assets for which Viacom paid so dearly. "This desire to have their fingers in lots and lots of pies, for extraordinarily high prices, could end up backfiring on them," one media analyst says.

"Right now everyone is running around trying to score synergy points," adds a competing media executive. "The biggest potential stumbling block is that they are so big, the synergy ends up, as at Time Warner, not really being there."

The tension is perhaps most evident at new businesses like Viacom New Media, a small company that could become the next cash and branding machine, à la MTV, but has yet to prove itself against Viacom's bottom-line mentality. The people are in place, the ideas have started to flow, product development is underway. But what if the new ideas don't work out? Are old brands enough? What if someone else gets there first with a better product?

"Two years from now, Viacom New Media could be one of the half dozen largest interactive studios," says Keith Benjamin, the media analyst at Robertson Stephens. But for now, it lost an estimated \$6 million in 1994, according to a Bear Stearns analysis. But Bear Stearns also expects a turnaround in 1995, with revenues of \$60 million and a profit of \$6 million.

Not everyone is sure that will happen. Last year was a bad Christmas for videogames in general and cartridge games in particular. Thanks to a glut of new machines, any one of which could be the next Genesis or the next Commodore, 1995 could be worse. "Viacom New Media came into the cartridge market when it was evaporating," says Gilman Louie, chairman of games giant Spectrum HoloByte. "It's going to take them a few years to learn the business."

Just three weeks after he was installed as president of Viacom Interactive Services, I visited Geoffrey Darby in his office, a stunning corner of Viacom's skyscraper which commands a river-to-river view of Manhattan. Flowers from a well-wisher still adorned a conference table. Yellow roses – for good luck. Does he need it? I ask.

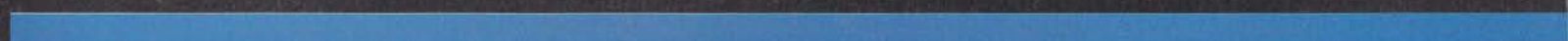
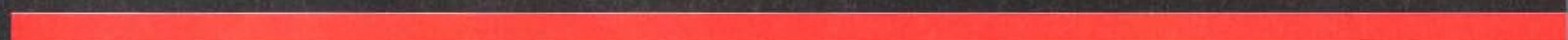
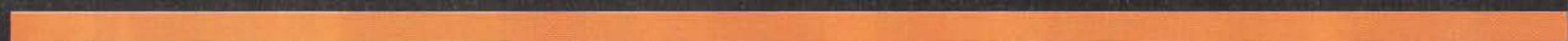
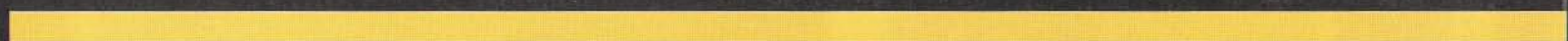
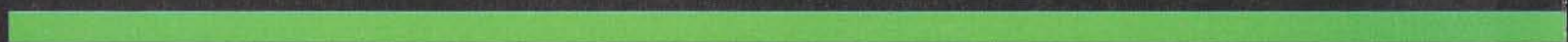
"I don't think the answers are there yet," he replied. "Which is why everyone wants the answers."

Will Viacom be the company to find them?

Darby thinks a moment, considering the size of the job ahead. "Have we figured it out yet? No. Are we going to? You bet?"

Darby is almost self-conscious as he makes this prediction, realising that he now speaks for a \$30 billion media conglomerate susceptible to institutional malaise, not the scrappy little company he worked for 10 years ago. True, Viacom is big, smart, and it's a tough competitor. But it faces impressive creative and organisational challenges. Certainly, I ask him, one company can't singlehandedly conjure up the future of new media.

"Well, I don't think *one* company in itself can create that kind of critical mass. Although, maybe," Darby smiles, pauses, and does some quick calculations in his head. "Maybe with Blockbuster you can." ■ ■ ■



In the future, people will do amazing things. Amazing

things. They will invent things we never thought of. They

will create things we never imagined. They will turn the

world sideways and rearrange it in new and different ways.

And people will be on the cover of WIRED. Not technology.

Not chips or plastic or circuits. People. It's not what the

computer can do, it's what you can do.



Message 1
Date: 1.4.95
From: Douglas Adams
<adamsd@cerf.net>
To: edit@wired.co.uk
Subject:

What Do We Have to Lose?

By Douglas Adams

Some of the most revolutionary new ideas come from spotting something old to leave out rather than thinking of something new to put in. The Sony Walkman, for instance, added nothing significantly new to the cassette player, it just left out the amplifier and speakers, thus creating a whole new way of listening to music and a whole new industry. The RISC chip works by the brilliant, life-enhancing principle of getting on with the easy stuff and leaving the difficult bits for someone else to deal with. (I know it's a little more complicated than that, but you have to admit, it's a damned attractive idea). A well-made dry martini works by the brilliant, life-

enhancing principle of leaving out the martini. to explain to the Amazon River, the Mississippi, the Congo, and the Nile how the coming of the Atlantic Ocean will affect them. The first thing to understand is that river rules will no longer apply.

Since you're currently holding a magazine, let's think about what might happen when magazine publishing is no longer a river in its own right, but is just a current in the digital ocean. Once we drop the idea of discretely bound and sold sheaves of glossily processed wood pulp from the model, what do we have left? Anything useful?

From the reader's point of view, it's useful in much the same way that a paper magazine is: it's a concen-

tration of the sort of stuff she's interested in, in a form that's easy to locate, with the added advantage that it will be able to point seamlessly at all kinds of related material in a way that a paper magazine cannot. All well and good. and there which you choose to click on. You only get to see the proper ad if you're actually interested in it, and that ad will then lead you directly towards solid, helpful information about the product. It is of course much more valuable for advertisers to reach one interested potential customer than it is to irritate the hell out of 99 others. Furthermore, the advertiser gets astonishingly precise feedback. They know exactly how many people have chosen to look at their ad and for how long. The advertisers pay the magazine for the opportunity to put links to their ads on popular pages of the magazine and — well, you see the way it works. It is, I am told by people with seriously raised eyebrows, astonishingly effective. What falls out of the model is the idea that advertising must be irritating or intrusive.

That's one model of how online magazines work and it is, of course, absolutely free to readers. There's another which will probably arrive as soon as it becomes possible to move virtual cash around the Internet, and that will involve readers being billed tiny amounts of money for the opportunity to read popular Web pages. Much less than you would, for instance, regularly spend on your normal newspapers and magazines because you wouldn't have to be paying for all the trees that have to be pulped, the vans that have to be fuelled and the marketing people to tell you how brilliant they are. The reader's money goes straight to the writer, with a bit for the publisher of the Web site, and all the wood can stay in the forests, the oil can stay in the ground, and all the marketing people can stay out of the Groucho club and let decent folk get to the bar.

Why doesn't all the money go to the writer I hear you (and indeed myself) asking. Well, maybe it will if he's happy just to drop his words into the digital ocean in the hope that someone out there will find them. But like any ocean, the digital one has streams, eddies and currents, and publishers have a role finding good material to draw into the currents readers will naturally be streaming through — which is more or less what they do at the moment. The difference will lie in the speed with which those streams will shift and surge, and the way in which power and control will shift to those who are actually contributing something useful rather than just having lunch.

The thing we leave out of the model is, essentially, just a lot of dead wood. ■ ■ ■

Let's think about what might happen when magazine publishing is just a current in the digital ocean



enhancing principle of leaving out the martini.

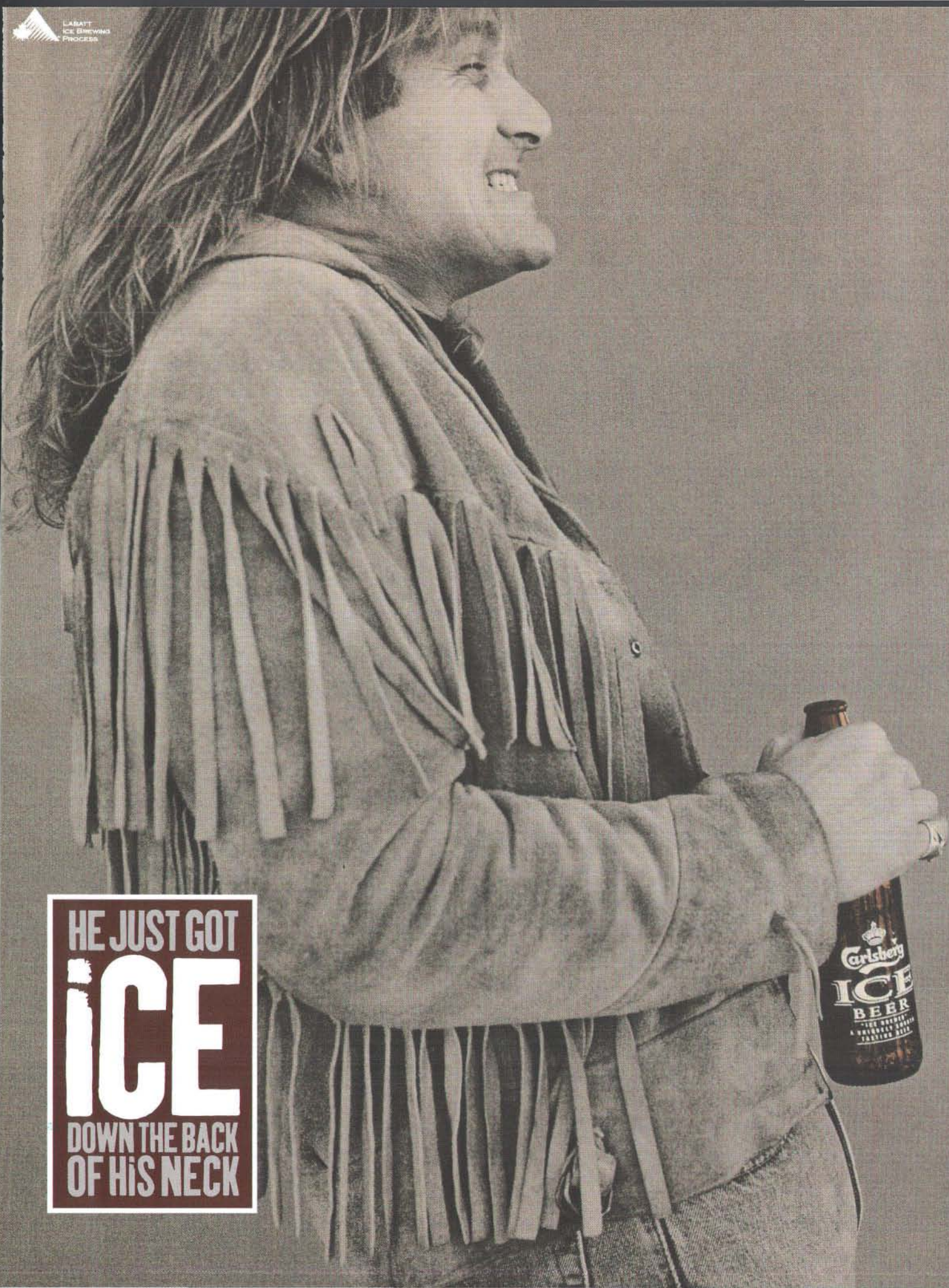
You also get dramatic advances when you spot that you can leave out part of the problem. Algebra, for instance (and hence the whole of computer programming), derives from the realisation that you can leave out all the messy, intractable numbers. Almost everything to do with the Net involves spotting the things we can now leave out of the problem, and location — or distance — is one of them. Wandering around the Web is like living in a world in which every doorway is actually one of those science-fiction devices which deposit you in a completely different part of the world when you walk through them. In fact it isn't like it, it is it. Trying to work out all the implications of this is as difficult as it was for early film makers to work out all the implications of being able to move the camera. What else is going to fall out of the model?

For a long time, nervous publishers, broadcasters, journalists and filmmakers have desperately hoped that the answer translated roughly into "not very much". ("People like the smell of books, they like popcorn, they like to see programmes at exactly the same moment as their neighbours, they like at least to have lots of articles that they've no interest in reading," etc.) But it's a hard question to answer because it's based on a faulty model. It's like trying

tration of the sort of stuff she's interested in, in a form that's easy to locate, with the added advantage that it will be able to point seamlessly at all kinds of related material in a way that a paper magazine cannot. All well and good.

But what about the magazine publisher? What does she have to sell? What's she going to do now that she doesn't have stacks of glossy paper that people are going to want to hand over wads of greenies to acquire? Well, it all depends on what sort of business you think she's in. Lots of people are not in the business you think they're in. Television companies are not in the business of delivering television programmes to their audiences, they're in the business of delivering audiences to their advertisers. (This is why the BBC has such a schizophrenic time — it's actually in a different business from all its competitors). And magazines are very similar: each actual counter sale is partly an attempt to defray the ludicrous cost of manufacturing the damn thing but is also, more significantly, a very solid datum point. The full data set represents the size of the audience the publisher can deliver to their advertisers.

If you browse around an online magazine (HotWired, for instance, springs unbidden to mind) you will find a few discreet little sponsor icons here



HE JUST GOT
ICE
DOWN THE BACK
OF HIS NECK



TBWA ABSOLUT COUNTRY OF SWEDEN VODKA & LOGO, ABSOLUT, ABSOLUT BOTTLE DESIGN AND ABSOLUT CALLIGRAPHY ARE TRADEMARKS OWNED BY V & S VIN & SPRIT AB. © 1989 V & S VIN & SPRIT AB.

ABSOLUT INTELLIGENCE.

THERE IS NO PURER VODKA THAN ABSOLUT. BE LOGICAL. DRINK IT NEAT AT 0° C.